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AUTHOR Bruening, Thomas H.; Scanlon, Dennis C.

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ABSTRACT

The status of career and technical education (CTE) teacher preparation programs was examined through a survey sent to all CTE program chairs and teacher educators with administrative responsibilities. The survey was also posted on the World Wide Web. Data were received from 227 programs from 164 institutions (response rate, 44%). Ten percent of the responses were obtained from the Web survey. The respondents reported that their teacher preparation programs remain very traditional from the standpoints of course structure and delivery. However, many respondents stated that they planned to double their distance education course offerings via the World Wide Web within the next 3 years. With an average of 6 credits per program, the teacher preparation curriculum was emphasizing academic-technical integration, an area that did not appear in the curriculum 10 years ago. Overall, the number of CTE teacher education programs had declined by approximately 11% over the past 10 years. The following items are among those appended: list of respondents by institution and program areas; characteristics of program administration; grade-point average requirements for program entry, exit, and transfer; and numbers/types of program entry and

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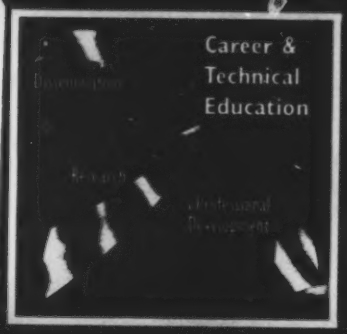

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The Status of Career and Technical Education Teacher Preparation Programs

Thomas H. Bruening
Associate Professor

Dennis C. Scanlon
Professor

Carol Hodes
Senior Project Associate

Purandhar Dhital, Xiaorong Shao and Shih-Tsen Liu
Graduate Assistants

The Pennsylvania State University

The National Research Center for Career and Technical Education
University of Minnesota
1954 Buford Avenue
Minneapolis, MN 55108

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PREFACE

This report contains data and related information regarding Career and Technical Education (CTE) (teacher preparation) as offered by colleges and universities throughout the United States. The results of this descriptive study are intended to provide a snapshot of the status of CTE (vocational education). It has been ten years since Lynch (1990) conducted a similar national study. A goal of the present study was to update the 1990 data to determine whether the number of programs and administrative characteristics have changed over the past ten years.

Data and information presented in this study are primarily about the programmatic and administrative structure of the way CTE teacher preparation is offered in the US. Objectives of this study were to describe the following:

1. demographics related to the characteristics of CTE teacher preparation at colleges and universities in the United States,
2. variables important to CTE teacher preparation,
3. curricula reform,
4. perceptions of competency emphasis in the curriculum,
5. alternative pathways to certification,
6. program entry and exit requirements, and
7. course delivery models.

A number of people have contributed to the development of the database, its analysis and publication. Of special note are graduate students Purandhar Dhital, Xiaorong Shao and Shih-Tsen Liu who worked tirelessly in data gathering, analysis, and documentation of the report. Dr. Carol Hodes worked effectively to help direct the project and to focus the efforts of the team to a timely completion; Colleen Bloom assisted with the preparation of the report and formatting of the final document.

The authors also appreciate the contributions of several individuals who reviewed the instrument and then provided feedback and advice on how to improve the data collection process: Drs. Rama Radhakrishna from Clemson University, Chet Wichowski and Nancy Erwin from Temple University, Tom O'Brien from Indiana University of Pennsylvania, and Richard Walter from Penn State University.

Finally, the authors thank the efforts of the individuals who took the time to report this data. In some sense it is increasingly difficult to collect any data from society at large. This was a large study and it was a challenge to find the target population. The effort put forth by respondents for this study is noteworthy and appreciated. It was a lengthy instrument that required detailed answers and had several sections with open-ended items that represented substantial amount of writing.

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Executive Summary

Concern about the state of career and technical education (CTE) teacher preparation programs includes the declining capacity to adequately train teachers who are equipped to implement the new vocationalism in an atmosphere of educational reform. The present study was conducted to update a similar study by Lynch (1990) and to give insight into the status of CTE teacher preparation in the United States, especially into the capacity to prepare new CTE teachers and to determine the curricular emphasis. The CTE teacher preparation curriculum was compared to the areas outlined by the National Board for Professional Teaching Standards (1997) in *Vocational Education Standards for National Board Certification.* Participants in this study were teacher educators with administrative responsibilities in CTE teacher preparation programs at post-secondary institutions in the US. Data were collected via a survey designed to gather information about a program's demographics, administration, curricular status, certification criteria, and methods of course delivery. Data were received from 227 programs at 164 institutions, representing a 44% return. The respondents reported that their teacher preparation programs remain very traditional in the structure and delivery of their courses. However, they also noted that they planned to double their distance education course offerings via the World Wide Web within the next three years. With an average of six credits per program, the teacher preparation curriculum had an emphasis on academic-technical integration, an area that did not appear in the curriculum ten years ago. Over all, the number of CTE teacher preparation programs had declined about 11% over the past ten years.

INTRODUCTION

In this era of educational reform, Career and Technical Education (CTE) faces, in addition to teacher shortages, the need for curricular revision. According to Camp (1998) there is an unmet demand for CTE teachers in certain certification areas. The 2000–2001 edition of the US Department of Labor (2000) Occupational Outlook Handbook states that overall, the number of career and technical teaching positions will grow approximately 10–20% through 2008. If this prediction is accurate, it may be increasingly difficult to continue CTE public school programs in some states and in some areas due to teacher shortages. Furthermore, the profession is concerned about the quality of the training that future teachers may receive.

Increasingly the profession is moving toward the integration of academic, career and technical education, collaborative learning arrangements and curricular projects, broadening education for career clusters, contextualized learning, accountability and career academics in programs. Additionally, CTE teachers must prepare a more diverse group of students for a workplace that values a broader range of skills. What is not clear is how these concepts and practices are being taught to inservice and preservice teachers. How many of these new and modified approaches to career and technical education are being taught in preservice programs? What practical and theoretical models are in place to help facilitate and to teach these future educators? How do technological changes impact both academic and job skills?

Clearly these pressing issues need to be resolved in order for the profession to move forward. To address these issues, a two-pronged scope of work was undertaken. First, a data warehouse was established to document the CTE programs nationwide. Second, analysis of data from CTE preservice programs described important characteristics of these programs and the context in which teacher preparation occurs.

Operational Definitions

There are many operational definitions used throughout this document. The following terms define the concepts used in this study, many of which are based on those of the National Council for Accreditation of Teacher Education (2001):

Academic Integration – including academic content and skills, such as math and writing skills, as part of the career-technical program of study.

Adult Education – education of adults who are not necessarily degree seeking or professionally credentialed.

Alternative Pathways – use of non-traditional pathways to bring students into a teacher certification program. Articulation agreements with community colleges or recruitment from institutions that do not have a teacher certification program are examples.

Approach – plan or style used to deliver education.

Articulation – uniting curricula or programs of study through a formal agreement between institutions.

Assessment – evaluation measures used to provide information for monitoring a candidate and improving educational programs.

Authentic Tasks – developing as part of the curriculum challenges and roles that reflect the complexities of actual scenarios encountered in the workplace or in life.

Career Technical Education (CTE) – formally vocational education. Career and Technical skills are the focus of the curriculum that is experientially based to demonstrate how education relates to the workplace and life.

Certification – the process by which professional recognition is granted to an individual who has met certain predetermined qualifications.

Certification Area – a specific content area in which professional licenses are issued. Agriculture and Business are examples.

Cohort Based – working through a course or program of study as a group.

Contextual Learning – designing learning environments that incorporate many different types of experience—social, cultural, physical, and psychological—to work with knowledge as it is typically applied.

Curriculum – courses, experiences, and assessments necessary to prepare candidates to teach or work with students of a particular age or in a specific subject level.

Distance Education – a formal education process where the majority of the instruction occurs when the learner and the instructor are not in the same place at the same time, often mediated by technology.

Field Experience/Field Based Experience – a variety of opportunities in which candidates may observe, assist, tutor, instruct, or conduct research. Field experience may occur in off campus settings such as schools or agencies.

Full Time Equivalent Faculty (FTE) – the number of employees of a higher education institution needed to fill one full-time 36-week contract.

Inservice – education that is delivered to teachers/administrators that are working in schools as educators.

Integration – a curriculum development approach that makes academic course work relevant to work. This may involve teachers across disciplines teaching related concepts concurrently using occupational themes.

Preservice – education that is pre-baccalaureate, generally to teachers not yet certified.

Professional Development – opportunities to develop new knowledge and skills through preservice or inservice education, conference attendance, sabbatical leave, summer leave, intra- or inter-institutional visitations, fellowships, etc.

Professional Development Model – developing new knowledge and skills through a formal structure.

Professional Development School – specially structured school in which P–12 and higher education faculty collaborate to (1) provide practicum, student teaching and internship experiences (2) support and enable inquiry directed at the improvement of practice, and (3) support and enhance student achievement.

Program – a planned sequence of courses and experiences leading to a degree or recommendation for a state license.

New Vocationalism – updated vocational education that reflects competencies and skills needed for a contemporary high performance workplace.

Teacher Candidate – a student enrolled in a program of study that culminates in recommendation for a state license.

Technology Education – the study of technology, which provides an opportunity for students to learn about the processes and knowledge that are needed to solve problems and extend human capabilities.

Teacher Educator – a faculty member who teaches in a teacher preparation program at an institution of higher learning.

Teacher Preparation Program – a formal program of study that prepares teacher candidates for a state license; a teacher education program.

Trade and Industrial – a teacher preparation program grounded in the manufacturing and construction skills.

BACKGROUND

Preservice CTE teacher education has been characterized as decreasing in capacity (Lynch, 1990), increasing in demand (US Department of Labor, 2000), and changing in focus (State Directors of Vocational Education Task Force on Vocational Technical Teacher Education, 1995; Holder & Pearson, 1996; Lynch, 1997; National Board for Professional Teaching Standards, 1997). There are indicators that the capacity of universities and four-year colleges to prepare preservice CTE teachers has decreased significantly over the past ten years in terms of number of institutions with programs, number of teacher educators, number of students enrolled, and financial subsidies provided by state vocational education agencies (Camp, 1998). In addition, some CTE teachers are being certified via an alternative pathway, such as non-baccalaureate postgraduate programs or through a combination of testing, coursework, and credit for work experience.

According to the Occupational Outlook Handbook released by the US Department of Labor in 2000, the demand for CTE teachers is increasing. This is thought to be due to several factors: the large number of CTE teachers retiring, opportunities for CTE teachers to return to private sector employment, and an increase in new positions in alternative fields (i.e., agriculture, business, family and consumer science, and technology). At the same time, there is a change in the competencies needed by CTE teachers. Specifically, areas such as school-to-career, youth apprenticeship, integration of academic and vocational education, articulation of secondary and postsecondary education, and coordination of school-, community- and work-based learning require more effective links between academics and the workplace.

Additionally, recent reports indicate existing discrepancies between teacher preparation, practice, and professional development. The US Department of Education (1999) indicated that fewer than 30% of new teachers feel well prepared, indicating discrepancies between teacher preparation and practice. Stasz and Brewer (1999), who studied the skills acquired by high school students and their relationship to post high school outcomes, reported that current academic coursework does not include the full range of skills teachers need on the job. They found that academic study lacked authentic tasks and, therefore, often failed to teach in a manner that resulted in the transfer of important job skills. Jobs are found to be increasingly complex and communities have a need for workers who can apply higher-level math skills and specific scientific knowledge in the workplace.

As found in the RAND study (Stasz & Brewer, 1999), traditional preservice program models have developed a population of teachers focused more on their own perceived needs than the actual needs of the community. Presently, there is no clear understanding of whether the workplace skills needed by society, which are delivered by the "education to work" programs, are being met by traditionally trained CTE teachers. To meet the need for skilled workers in the future, CTE programs should be the result of partnerships between schools and business, and the incorporation of current work-based skills into the curriculum (Stasz & Brewer, 1999). Teachers are required to further understand the role of academics in business, industry and community organizations, and how to ensure that their programs remain aligned with needs of the workplace (Phelps, 1998).

The ways teachers work also will be obliged to change. Instead of the typically isolated teacher, future CTE teachers will need to work with many elements of the community to develop an integrated curriculum based on collaboration that will advance and assess student learning across the curriculum (Finch, Schmidt & Faulkner, 1992). In addition, CTE programs need to attract students who desire to learn academic subjects in light of rising academic standards for new teachers. Thus, employers, students and teachers must reach consensus on the scope of the curriculum to ensure its relevance.

Project Objectives

The overall objectives of this initiative were to:

- Collect baseline data by contacting each state's vocational director and professors-in-charge of the CTE teacher preparation programs in the US to identify and describe the characteristics of teacher preservice and, to a lesser extent, inservice CTE programs regarding enrollments, size of faculty, pathways to certification and methods of course delivery;

- Identify curricula elements used in preservice programs and categorize them for factors that meet the expanded role of CTE in areas such as integration, contextualized learning, and career academics (the new vocationalism) as outlined by the National Board for Professional Teaching Standards (1997).

METHODS

The Instrument

Since the goal of this project was to document the current status of CTE teacher preparation programs, the instrument was sent to all CTE program chairs and teacher educators with administrative responsibilities. The survey was also made available on the Web. Ten percent of the returns came from the web form.

Survey construction was guided by several reports: Standards for National Board Certification: Vocational Education by the National Board for Professional Teaching Standards (1997), Association for Career and Technical Education Division Report: Trade and Industrial Education (Walker & Zirkle, 2000) and A National Database On Vocational Teacher Education (Lynch, 1990). Three external teacher educators also validated the survey in addition to internal reviewers.

The programmatic survey had six sections: Competencies for CTE Teachers, CTE Certification Process, Course Delivery, Recent Program Revisions, CTE Program Demographics, and Tracking Information. The importance of several educational principles were measured in conjunction with the importance of the following teacher competencies: preparation to teach workplace readiness, student assessment, career decision making, learning to learn, business skills, managing life roles, social development, collaboration with various segments of the community. The instrument also includes items intended to gather information on both preservice and inservice CTE teacher education programs to get an indication of how many CTE teachers are being prepared outside the traditional 4- or 5-year baccalaureate programs. Reliability data are presented in Table 1.

Table 1
Reliability Statistics for Scale Used for Measuring Importance of CTE Competency Area, and Program Changes

No.	Variable	Cronbah's Alpha	Number of Items in Scale
1.	Competency area [a]	0.91	38
2.	Program revision due to educational reform movement [b]	0.73	5
3.	Program revision due to Legislation [b]	0.79	5

[a] Importance of competency area were measured by using a 5-point Likert type scale: (5) Very Important, (4) Important, (3) Somewhat Important, (2) Low Importance, and (1) Not At All Important

[b] Program area revisions were measured by using 3-point Likert type scale: (3) Changed Significantly, (2) Changed Little, and (1) No Change

Limitations

While every effort was made to ensure that there was a comprehensive database of programs for career and technical teacher preparation, the reader is cautioned that the following limitations may apply:

1. Participation in the study was on a voluntary basis and data supplied was generated by the participant and may or may not be accurate.

2. The database was built from aggregate data and the limited responses of state directors.

3. Some of the data attempted to measure complex indices related to program emphasis and change and were a single person's perceptions, which may not reflect the views of the entire university or college.

And finally the reader should recall that statistical analyses of data have a tendency to aggregate data into an average or mean score. Since it is impossible to believe some responses on a number of variables, such as size, institutional program, etc., the reader is cautioned that the mean was reported may not be the true representative of activities or practices at any single program. Thus, this study does not intend to produce solutions that are comprehensive or generalizable to all problems facing CTE teacher preparation.

The Population

The population for this programmatic survey was intended to be inclusive and representative of teacher preparation programs in the US. This study attempted to survey all CTE teacher preparation programs in the US and its territories. Lynch (1990) included only institutions with four or more certification areas and presented data from 78 institutions although he had identified 432 institutions that prepared CTE teachers. With a goal of producing an accurate listing of who is preparing teachers in Career and Technical Education, three main information sources were used. Some of the following sources referenced the older term "vocational education."

First, Peterson's Guides UndergradSearch (1998), an on-line directory, and the NCATE on-line directory (NCATE, 2001) were cross-referenced to establish a baseline of institutions offering teacher preparation in Career and Technical Education areas. Second, a request for listings of contact people for CTE teacher preparation programs in each state, territory, and the District of Columbia was mailed to each state's vocational director. The returns from this request greatly expanded the database. Third, listings from professional associations were used, including the Association for Career and Technical Education, the Marketing Education Association, the American Association for Agriculture Education, the Council on Technology Teacher Education, National Directory of Vocational Technical Teacher Education Programs, and the National Association of Industrial and Technical Teacher Educators, and the American Association for Family and Consumer Science. By combining and cross-referencing these three searches and listings, a comprehensive database was compiled that initially contained 673 individual teacher educators with administrative responsibilities at 385 institutions which prepare CTE teachers for certification.

To have the most comprehensive information on the status of CTE teacher preparation, 673 individual program chairs and teacher educators with administrative responsibilities were sent the survey instrument. The database record number tracked survey returns. After 4 weeks, a follow-up postcard that mentioned the URL for the on-line survey was mailed to non-respondents. A second survey mailing was done approximately one month later, which increased the returns.

RESULTS

Forty-four percent of the surveys were returned, compared to the national average for this type of survey research of 28% (Dillman, 2000). Of the returned surveys, there were 227 surveys from 164 institutions of higher education. Forty-eight institutions (7.1%) indicated that they did not offer a CTE teacher certification program. As a follow up, eighty (20%) of the 398 non-respondents were randomly selected to receive randomly selected items (15%) from the instrument. Fifteen percent of those individuals who were contacted responded to the follow up. No significant differences were found between the mean score of the original respondents and follow-up respondents when compared to specific items.

Data were received from 45 states and Puerto Rico. There were no CTE program data received from Alaska, the District of Columbia, Nebraska, Rhode Island, Vermont, or Wyoming, as well as Guam, American Samoa, the Marshall Islands, and the Commonwealth of the North Marianas. Nine institutions responded that their teacher preparation programs had been suspended or phased out: New Mexico Highlands, Texas A&M at both Kingsville and Commerce, University of Rhode Island, James Madison University, University of W. Alabama, West Virginia Wesleyan, plus two unidentified programs. Two programs (University of Minnesota in Agricultural Education and Mary Washington College) felt they were too new to complete this survey since their teacher preparation programs did not begin until the 2000–2001 academic year.

Data Analysis

Survey returns were analyzed using Statistical Package for the Social Sciences (SPSS). The on-line surveys were collected in a FileMaker Pro database prior to being entered into SPSS. The data are primarily Likert scale and categorical data. Measures of central tendency and percentages were used for most of the survey items. Numbers in the tables and charts may not add up to 100% due to rounding and missing data.

CTE Teacher Education Program Demographics

Characteristics of Participating Institutions

A summary of participating institutions is presented in Appendix A. A total of 227 responses from 164 institutions were included in the study. There were three on-line responses that did not identify their institution, making 224 responses identifiable by institution. Participating institutions were classified by type and credit hour system (Table 2). Approximately half (50.7%) of the participating institutions were public non-land grant state colleges or universities followed by approximately one-third public land grant institutions (34.1%). About 15% of the institutions were either two-year, church-related or independent colleges or universities. One institution could not be identified as to its type.

The Lynch (1990) report suggested that 47% of the CTE teacher preparation programs were at public land grant colleges or universities and 53% were located at public non-land grant state colleges or universities. Table 2 also shows that a majority of the responding institutions (91.5%) used a semester-based system. This represented an increase from ten years ago when only 83% of the institutions used a semester-based system (Lynch, 1990). The semester credit

hour system was prominent both in public land grant, as well as public non-land grant colleges and universities. Only 7.9% of the representative institutions had a quarter-hour credit system, and among them more than half were public non-land grant institutions. Only a few of the non-land grant and independent private universities or colleges indicated that they had a quarter-hour credit system (5.5%).

Table 2
Responding Institutions by Type and Credit Hour System

Institution type	Credit Hours							
	Semester		Quarter		Other[a]		Total[b]	
	%	*N*	%	*N*	%	*N*	%	*N*
Land grant	32.3	53	1.8	3	-	-	34.1	56
Non-land grant	46.4	76	4.3	7	-	-	50.7	83
Independent	6.7	11	1.2	2	-	-	7.9	13
Church-related	6.1	10	-	-	0.6	1	6.7	11
2 Year College	-	-	0.6	1	-	-	0.6	1
Total	91.5	150	7.9	13	0.6	1	100.0	164

[a] Identified as Two-year community/private college by a respondent.
[b] Some respondents provided data identifying their institution's type but not their institution's name.

Program areas from the 164 responding institutions (colleges and universities) were compiled into seven categories: (1) Agriculture (AG), (2) Business (BUS), (3) Family and Consumer Science (FCS), (4) Trade and Industrial Education (T & I), (5) Marketing (MAR), (6) Health Occupations (HO), and (7) Technology Education (TE). Five institutions reported multiple certification programs.

Figure 1 represents the respondents by CTE area. Agricultural Education had the largest number of respondents to the survey with slightly more than 31%, followed by Family and Consumer Science (27.9%), Technology Education (12.8%), Business Education (10.5%), Trade and Industrial Education (8.2%), Marketing (5.9%), Health Occupations (2.3%), and 1.3% marked the "other" category.

Data collected from the respondents show that the reported number of programs in three areas—Agriculture (*N*=67), Family and Consumer Science (*N*=61), Technology Education (*N*=28)—tended to be the most common certification areas (71.8% of all programs), while the following five areas occupied only 26.9% of the total: Business (*N*=24), Trade and Industrial Education (*N*=18), Marketing (*N*=12), and Health Occupations (*N*=5).

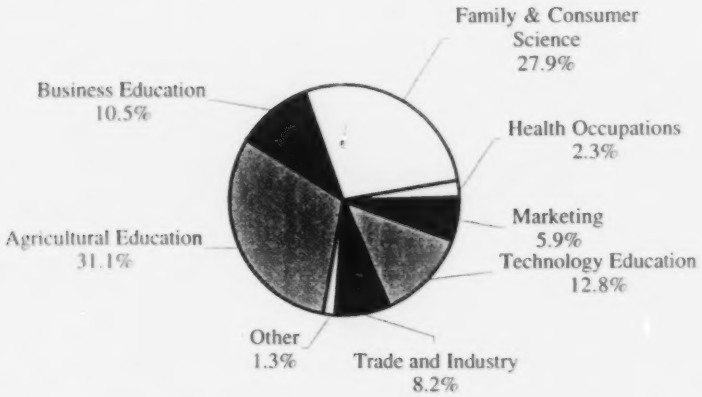

Figure 1. Respondents by CTE Areas (N =219)

The following number of programs were reported ten years ago (Lynch, 1990): Agriculture (N=41), Business (N=54), Health Occupations (N=15), Home Economics (N=59), Marketing Education (N=37), Trade and Industrial Education (N=58), and Technology Education/Industrial Arts (N=58). Thus, the only two areas that seemed to have a slight increase in number of programs over the past 10 years are Agriculture and Family and Consumer Science (formerly Home Economics). All other areas had lost a considerable number of teacher preparation programs in the 1990s.

Characteristics of the Respondents

The respondents were teacher educators who had administrative responsibilities in career technical teacher preparation programs throughout the United States. More than 87% of the teacher educators with administrative responsibilities represented public land grant and public non-land grant colleges or universities (Figure 2). The participation was higher (46.3%) from public non-land grant colleges/universities than from the public land grant colleges or universities (41%). Slightly more than 12% of the respondents were located in church-related or independent private institutions. Of the total, about three-fourths (74.3%) of the respondents were from NCATE accredited institutions (Figure 3).

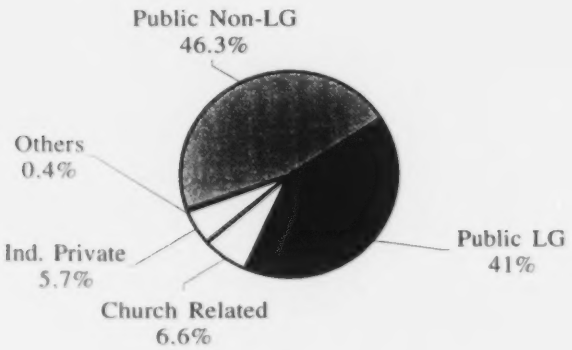

Figure 2. Representation of CTE Teacher Respondent by Type of Institution (N =226)

A majority of the respondents (57.9%) were from a department or college of Education, followed by colleges/departments of Agriculture (17.8%), and Family and Consumer Sciences programs (6.4%). The rest were from departments or colleges related to Health Occupations, Marketing, Business, or Professional Studies, occurring almost in equal proportions. Very few (2.7%) responded from Engineering colleges or departments (Figure 4).

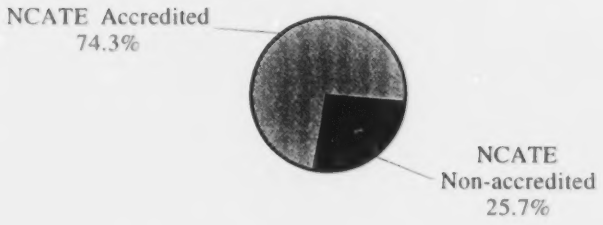

Figure 3. NCATE Accreditation of Institution (N =226)

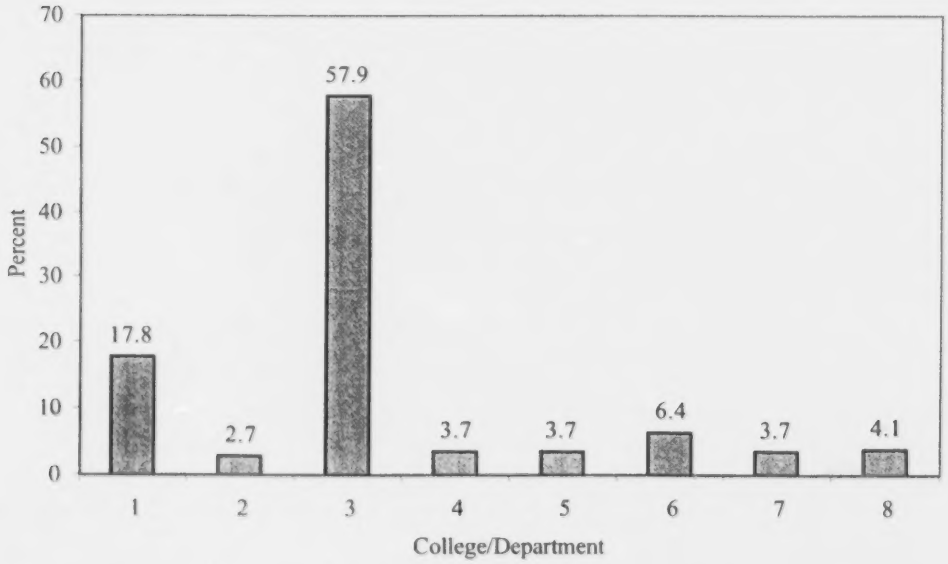

Figure 4. Respondents by Colleges that Administer CTE Programs (N=219). 1=Agriculture, 2=Engineering, 3=Education, 4=Professional Studies, 5= Bus./Tech & Humanities, 6=Fam./Home/Soc. Sc., 7=Home Economics, 8=Other

Respondents indicated a wide range of job titles for their administrative positions (Table 3). About 41% of the respondents reported that their primary responsibility was department head, followed by coordinator (22.1%), and supervisor/manager (11.7%). The respondents also varied by the number of responsibilities that they held within the department or university. A majority (62.8%) indicated that they engaged in a single prime responsibility such as department head or program coordinator.

Table 3
Responsibilities of Respondents

Area of Responsibility	%	*N*
Department head/Chair	40.7	63
Coordinator	22.1	34
Supervisor/Manager	11.7	18
Director	6.5	10
Administrator	3.9	6
Recruiter	1.9	3
Curriculum Developer	1.3	2
Program Leader	1.3	2
Head Teacher	0.6	1
Others[a]	10.0	15
Total	100.0	154

[a] This includes respondents who indicated multiple responsibilities: (1) Dept. Head/Supervisor/Manager (*N*=4), (2) Coordinator/Supervisor/Manager (*N*=4), (3) Department Head/Coordinator (*N*=3), (4) Administrator/Mentor (*N*=1), (5) Department Head/Coordinator/Supervisor (*N*=1), (6) Coordinator/Mentor/Recruiter/Manager (*N*=1), & (7) Director/Supervisor/Manager (*N*=1).

Program Administration

Data in Table 4 suggest that 202 of the 218 respondents (92.5%) reported having a semester credit hour system. Very few used a quarter system (6.5%). Table 5 provides expanded data on the administrative units for career and technical teacher education programs. Public universities administer the highest proportion of CTE teacher preparation programs compared to other independent universities. Table 5 also provides data on the broad administrative units for CTE teacher education programs. The CTE certification programs were administered in at least seven different schools or colleges, but primarily the programs were centered in Colleges of Education (58%), or Colleges of Agriculture (17.8%). While some noted that the administration was based in a College of Agriculture, teacher certification/licensure was processed through the College of Education.

Table 4
Respondents by Colleges that Administer CTE Program and Credit Hour System

Credit Hour System	College/Departments [a]											
	Agriculture		Engineering		Education		Prof. Studies		Others		Total	
	%	N	%	N	%	N	%	N	%	N	%	N
Semester	16.0	35	1.8	4	50.9	111	3.2	7	20.6	45	92.5	202
Quarter	1.4	3	0.0	0	3.2	7	0.5	1	1.4	3	6.5	14
Other	0.0	0	0.0	0	0.5	1	0.0	0	0.5	1	1.0	2
Total	17.4	38	1.8	4	54.6	119	3.7	8	22.5	49	100.0	218

[a] Colleges/Departments are broadly classified. Refer to Appendix B for detail on the "Others" category, which includes a variety of names among schools of education

Table 5
Career and Technical Education (CTE) Program Administration by College and Institution Type

College/ Department [a]	Institution Type											
	Public Land Grant		Public Non-Land Grant		Independent/ Private		Church –Related Private		Others		Total [b]	
	%	N	%	N	%	N	%	N	%	N	%	N
Education	22.8	50	27.9	61	3.7	8	3.2	7	0.5	1	58.0	127
Agriculture	12.8	28	4.6	10	0.0	0	0.5	1	0.0	0	17.8	39
Family, Consumer or Home Sciences	3.2	7	1.8	4	0.5	1	0.9	2	0.0	0	6.3	14
Home Economics	1.4	3	1.8	4	0.5	1	0.0	0	0.0	0	3.7	8
Prof. Studies	1.4	3	1.8	4	0.0	0	0.5	1	0.0	0	3.7	8
Business & Technology	0.0	0	3.2	7	0.5	1	0.0	0	0.0	0	3.7	8
Engineering	0.0	0	2.3	5	0.0	0	0.5	1	0.0	0	2.8	6
Other	0.9	2	1.8	4	0.5	1	0.9	2	0.0	0	4.0	9
Total	42.5	93	45.2	99	5.5	12	6.5	14	0.5	1	100.0	219

[a] This category comprised classifications provided by 219 respondents. Detailed specification of Colleges/Departments with in the categories is provided in Appendix E.
[b] Percentages may not total 100% due to rounding.

The College of Education was the primary administrative unit to administer the majority of CTE certification programs, followed by the College of Agriculture for both land grant public institutions and non-land grant institutions. The names of the colleges or departments offering a Family and Consumer Sciences certification were quite varied. Names of these colleges often included phrases such as "Human Ecology," "Human Resources," or "Human Environment." A sample of the reported names of the administrative units is listed in Appendix B.

Program Size

Both land grant and non-land grant institutions remain important in the preparation of CTE teachers. Institutions in the present study with the largest total enrollments were the land grant and non-land grant public institutions (Table 6). However, the enrollments in BS degree preservice programs for these institution types were similar to independent and church-related institutions with their smaller total enrollments. The role of the land grant and non-land grant public colleges and universities in CTE preparation is that they have a higher number of students seeking teacher certification, either as an undergraduate minor, a master's degree, a returning adult student, or by some alternate path to certification.

Table 6
Program Area and Size by Institution Type

Program Area	Type of Institution									
	Land grant		Non-land grant		Independent		Church-related		Other	
	M	*N*	*M*	*N*	*M*	*N*	*M*	*N*	*M*	*N*
No. of undergraduate students in the BS program	90.44	56	168.70	76	87.73	11	192.41	11	0	0
No. of undergraduates seeking certification only	54.78	52	43.34	68	21.56	9	15.67	9	0	0
No. of undergraduates who earned a CTE certification	13.64	51	26.09	70	3.06	8	2.44	9	0	0
No. of 4-yr graduates who earned a CTE certification	10.64	50	14.34	66	3.67	9	6.70	10	0	0
No. of returning adult students with BS degrees seeking CTE certification only	22.38	50	15.05	67	6.50	10	1.90	10	0	0
No. of students seeking certification via an alternate route	37.05	51	15.73	59	1.38	8	1.10	10	62	1
No. of 5-yr undergraduates seeking CTE certification	3.41	42	1.78	55	2.57	7	12.78	9	0	0
Total no. of students enrolled in the university/college	19,910	55	12,792	82	4,063	13	5,237	11	1,700	1

Note. *M* = mean, *N*= Number of students enrolled

The largest total number of undergraduate students in the BS programs were at church-related institutions (*M*=192), followed by non-land grants (*M*=169), land grant (*M*=90), then independent institutions of higher learning (*M*=88) (Table 6). However, when considering the number of students seeking certification and students earning CTE certification, the numbers represented by the various institutions are dramatically changed. Land grants had the most students seeking a CTE certification from outside their department (*M*=55), followed by non-land grants (*M*=43), independents (*M*=22), then church-related (*M*=16) institutions of higher learning. Non-land grant institutions had the most students who earned a CTE certification with their four-year degree (*M*=26).

Land grant institutions had the largest number of returning adult students who held BS degrees seeking CTE certification (*M*=22) during the 1999–2000 academic year, compared to non-land grant institutions (*M*=15). Land grant institutions also had the largest number of students seeking certification via an alternative route (*M*=37), compared to the non-land grant institutions (*M*=16), and independent institutions and church-related institutions with one student each who sought a certification.

Church-related institutions had the most five-year undergraduate students seeking CTE certification (*M*=13), compared to land grant institutions (*M*=3.4), independents (*M*=2.6), and non-land grant institutions (*M*=1.8).

The Faculty

Data were analyzed to better understand how many faculty generally support a CTE teacher preparation program, both at the inservice and preservice levels, as well as the adjunct faculty.

Preservice Faculty. The average number of full-time equivalent preservice faculty for CTE teacher preparation by institution type is represented in Figure 5. As seen in this figure, public land grant institutions employ the largest number of faculty with an average of 2.8 FTE (*N*=76) per land grant institution. The public non-land grant institutions had 2.3 FTE (*N*=79) preservice faculty, followed by the church-related with 2.1 (*N*=11), and the independent private institutions with 2.0 (*N*=10).

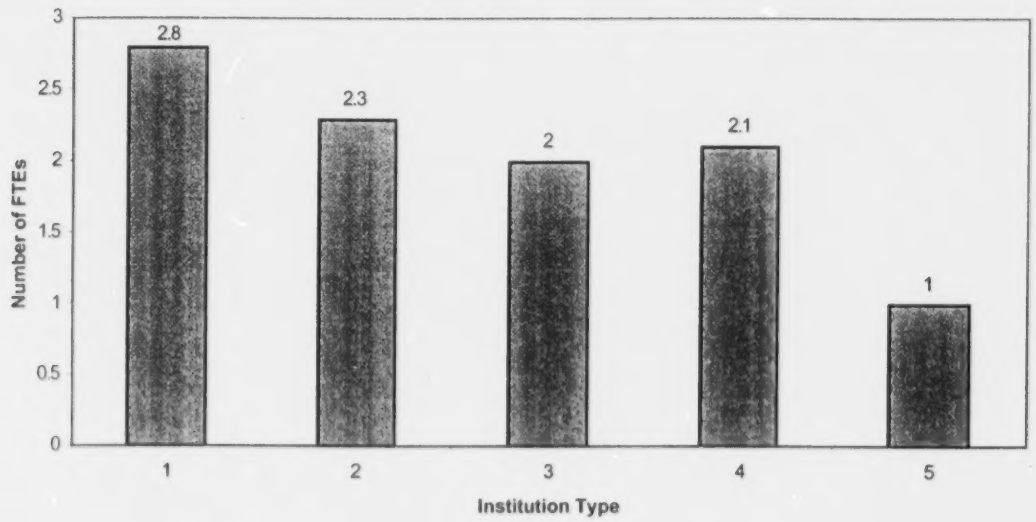

Figure 5. Number of Preservice Full Time Equivalent Faculty (FTEs) by Institution Type(*N*=177). 1=Public LG, 2=Public Non-LG, 3=Ind. Private, 4=Church-related, 5=Other

Figure 6 represents the average number of preservice full-time equivalent faculty (within departments) by colleges that administer CTE programs. Colleges of Engineering had the largest number with an average of 2.9 FTE (*N*=5). Colleges of Education were second at 2.8 FTE (*N*=96), and Home Economics was last with an average of 1.6 FTE (*N*=13). While the number of programs reported in Table 7 is too small to warrant further discussion, the overall average is about 2.2 FTE per certification area or program administrative unit.

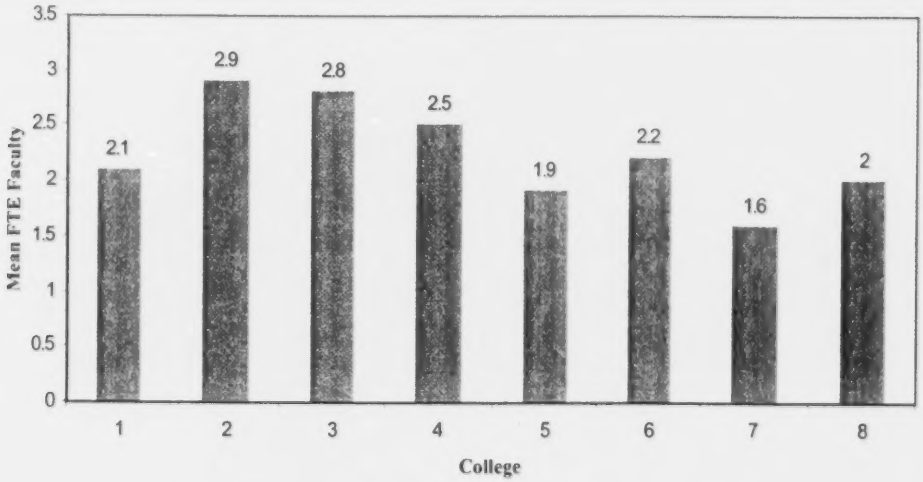

Figure 6. Average Number of Preservice Full Time Equivalent Faculty (FTE) (within departments) by Colleges that administer CTE Programs (*N*=176). 1=Agriculture, 2=Engineering, 3=Education, 4=Professional Studies, 5=Business & Technology, 6=Family or Consumer Science, 7=Home Economics, 8=Other.

Table 7
Total FTE Positions in the Preservice Programs for each Certification Area/Program by Type of Institution

Certification Area/ Program [a]	Type of Institution												Grand Mean		
	Public Land grant			Public Non-land grant			Independent, Private			Church related					
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Ag. Ed.	2.45	1.24	41	1.79	1.15	17	-	-	-	4	-	1	2.28	1.25	59
Bus. Ed.	1.58	0.86	13	2.31	2.24	24	2	1	3	0.25	-	1	2.01	1.83	41
FCS	1.17	0.46	22	1.25	0.72	23	1.6	0.55	5	1.53	1.13	9	1.29	0.7	59
HO	3	2.83	2	0.55	0.43	3	-	-	-	-	-	-	1.53	1.97	5
Market	1.5	0.58	4	1.63	0.88	8	-	-	-	-	-	-	1.58	0.76	12
Tech. Ed.	2.68	1.49	11	2.11	1.48	14	4	-	1	4	-	1	2.48	1.49	27
T & I	1.96	1.56	13	2.36	1.7	18	-	-	-	-	-	-	2.19	1.62	31
Other	1	0	2	14	15.56	2	-	-	-	8	-	1	6.5	9.46	6
Grand Mean	2.84	5.63	[b]	2.3	3.01	[b]	2	0.94	[b]	2.13	1.82	[b]	-	-	[b]

[a] Ag. Ed.: Agricultural education/Agricultural science and technology/Agricultural science.
Bus.Ed.: Business education/business and marketing education/Technology, business, and marketing/Business & Office.
FCS: Family and consumer sciences/Vocational home economics.
HO: Health occupations education.
Market: Marketing.
Tech. Ed.: Technology education/Post-secondary technology education/Technical and occupational education.
T&I: Trade and industry/Industrial technology education/Industrial vocational education/Industrial education/Industrial arts education/Vocational industrial education/Vocational education/Career and technology education/Workforce education/Vocational technological education
Other: All teacher education/General adult and vocational technology education/Teacher education/Vocational teacher education/All CTE
[b] Grand means/totals are not appropriate here as program chairs could indicate more than one certification area per institution.

Inservice Faculty. Inservice faculty, frequently are active in CTE teacher preparation of non-traditional students. These data indicate that public land grant, public non-land grant, and independent institutions all have about an average of two full-time equivalent inservice faculty (Figure 7). Figure 8 represents the average number of inservice FTE faculty (within departments) by colleges that administer CTE programs. A Professional Studies College is the largest with 4.0 FTE and Home Economics is the smallest with 0.5 inservice FTE. Overall, the certification areas with the largest number of full-time equivalent inservice faculty at public land grants was Technology Education (*M*=3.7), Trade and Industrial Education (*M*=2.6), and

Agricultural Education (M=1.9) (Table 8). In terms of inservice faculty numbers, at the land grant and non-land grant public institutions, Trade and Industrial Education (M=2.6 and 3) and Technology Education programs (M=3.7 and 1.9) had the most faculty, respectively. Agricultural Education had 1.5 and Business Education had 1.4 FTE, each of which considered themselves as inservice faculty.

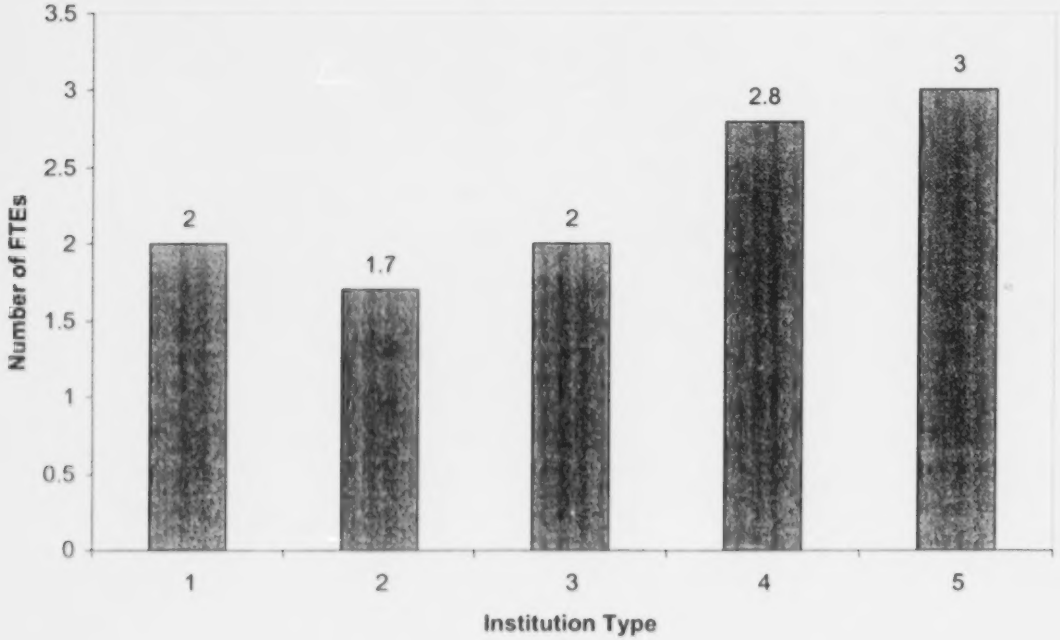

Figure 7. Number of Inservice Full Time Equivalent Faculty (FTEs) by Institution Type (N=93). 1=Public LG, 2=Public Non-LG, 3=Ind. Private, 4=Church-related, 5=Other

Table 8
Total FTE Positions in the Inservice Programs for Each Certification Area/Program by Type of Institution

Certification Area/ Program [a]	Type of Institution														
	Public Land grant			Public Non-land grant			Independent, Private			Church-related			Grand Mean		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Ag. Ed.	1.93	1.47	26	1.49	0.90	8	-	0.00	0	-	-	-	1.82	1.36	34
Bus. Ed.	1.36	0.74	11	1.40	0.57	10	3.50	2.12	2	8.00	-	1	1.83	1.63	24
FCS	1.05	0.73	13	1.07	0.76	11	1.08	0.88	3	1.67	1.15	3	1.13	0.77	30
HO	0.50	-	1	0.50	0.00	2	-	-	-	-	-	-	0.50	0.00	3
Market	1.25	1.06	2	1.13	0.63	4	-	-	-	-	-	-	1.17	0.68	6
Tech. Ed.	3.67	0.58	3	1.94	1.59	8	-	-	-	-	-	-	2.41	1.58	11
T & I	2.61	2.45	8	3.04	2.54	13	-	-	-	1.00	-	1	2.79	2.42	22
Other	-	-	-	-	-	-	-	-	-	-	-	-	3.00	-	1
Grand Mean	2.00	1.61	[b]	1.71	1.27	[b]	2.05	1.81	[b]	2.80	3.03	[b]	-	-	[b]

[a] Some of the respondents indicated faculty who teach in multiple program areas:
Ag. Ed.: Agricultural education/Agricultural science and technology/Agricultural science.
Bus.Ed.: Business education/business and marketing education/Technology, business, and marketing/Business & Office.
FCS: Family and consumer sciences/Vocational home economics.
HO: Health occupations education.
Market: Marketing.
Tech. Ed.: Technology education/Postsecondary technology education/Technical and occupational education.
T&I: Trade and industry/Industrial technology education/Industrial vocational education/Industrial education/Industrial arts education/Vocational industrial education/Vocational education/Career and technology education/Workforce education/Vocational technological education.
Other: All teacher education/General adult and vocational technology education/Teacher education/Vocational teacher education/All CTE.

[b] Grand means/totals are not appropriate here as program chairs could indicate more than one certification area per institution.

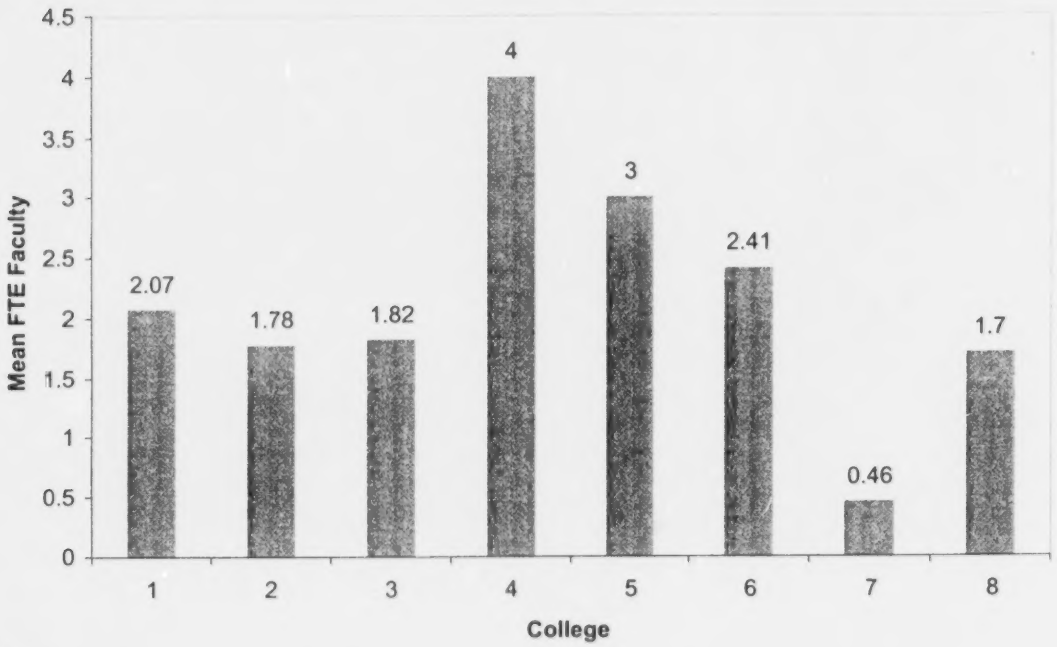

Figure 8. Average Number of Inservice Full Time Equivalent Faculty (FTE) by Colleges that Administer CTE Program (*N*=93). 1=Agriculture, 2=Engineering, 3=Education, 4=Professional Studies, 5= Bus./Tech & Humanities, 6=Fam./Home/Soc. Sc., 7=Home Economics, 8=Other

Adjunct Faculty. Sixty-two percent of the programs used adjunct faculty (Figure 9). The highest number of adjunct faculty was 30 at a state university. Figure 10 represents the average number of adjunct faculty used in CTE programs in the 1999–2000 academic year for both preservice and inservice programs in each certification area. Technology education had the largest number (*M*=6) and agricultural education had the lowest number of adjunct faculty (*M*=1.7). The average CTE preservice program used three adjunct faculty, which is larger than the average number of FTEs reported in Figures 5 and 6.

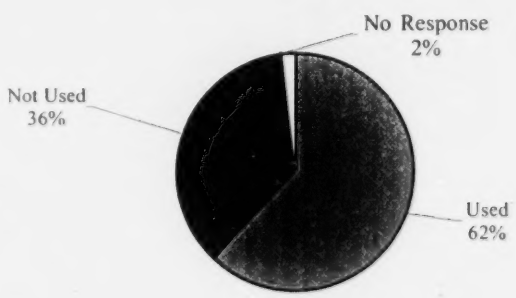

Fig.9. Proportion of Adjunct Faculty Used in CTE Programs in the 1999-2000 Academic year

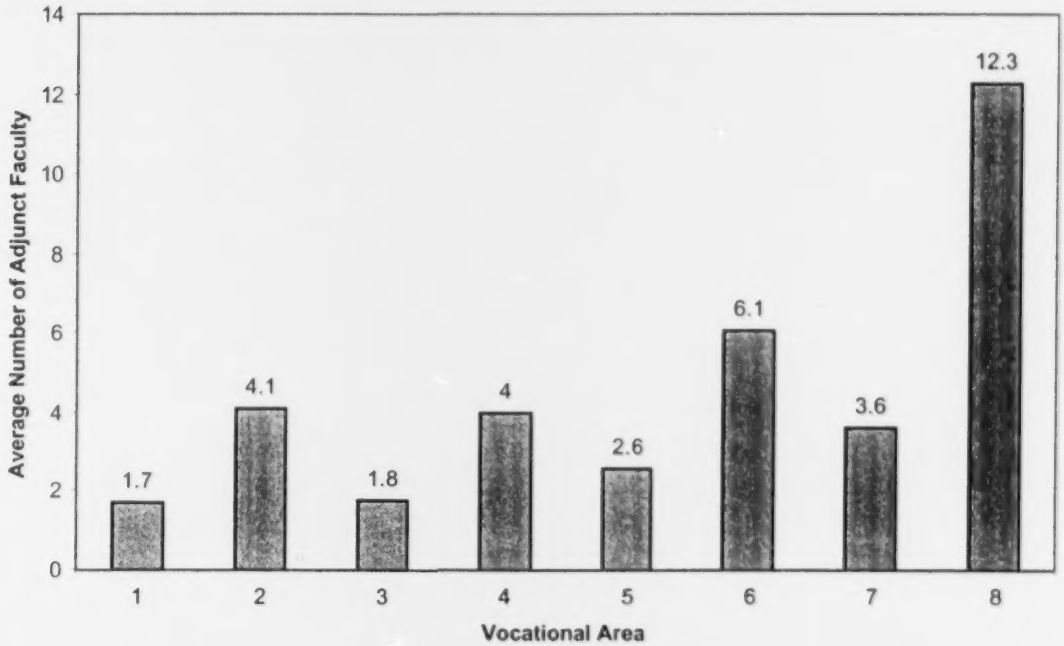

Figure 10. Average Number of Adjunct Faculty Used in CTE Programs in 1999-2000 Academic Year. 1=Agricultural Education, 2=Business Education, 3=Family & Consumer Science, 4=Health Occupations, 5=Marketing, 6=Technology Education, 7=Trade and Industry, 8=Other

Course Delivery

The manner in which courses are delivered appears to be changing in higher education. Table 9 shows that CTE teacher preparation programs primarily offered courses on campus (94.2%), while 36.2% of the programs offered courses at off campus locations. Over half (58%) of the programs offered field-based courses, which may be based in nearby public schools or agencies, while only 22.8% offered cohort-based courses, which are based on working as a group in a course or program of study. The tendency was to offer the field-based courses to students on campus, and not enroll these students in the satellite programs at locations farther from campus (Table 10).

Table 9
Pattern of Course Delivery of Teacher Preparation Courses

Pattern of Delivery	Yes		No		Total	
	%	N	%	N	%	N
Courses are offered on campus	94.2	212	5.8	13	100	225
Courses are offered off campus	36.2	81	63.8	143	100	224
Courses are field-based	58.0	130	42.0	94	100	224
Courses are cohort-based	22.8	51	77.2	173	100	224

A number of programs offered courses that were part of campus resident education delivery system as may be noted from Table 10 (57%). Slightly more than 26% of the respondents indicated they had off-campus satellite courses. There was a tendency to offer the field-based courses to students on campus, and not enroll these students in the satellite programs at locations farther from campus (Table 10).

Table 11a indicates the teacher education programs and their use of distance education to deliver courses. Table 11b shows the frequency that the teacher preparation programs used distance education as a delivery strategy. Institutions of higher learning in this study were investing heavily in the development of distance education courses (47.7%) to increase access to education (Table 11a). Traditional "classroom" courses where students sit in rows can no longer be assumed. Although information on the specific types of courses taught via distance education was not gathered, i.e., whether or not these courses were core courses or electives, nearly sixty-five percent (64.8.%) of the CTE programs reported offering some type of distance education courses on a regular basis as part of their program of study (Table 11b). Over 35% of the respondents indicated that distance education courses were offered occasionally (Table 11b).

Table 10
Career and Technical Education (CTE) Program Course Structure by Location and Type of Instruction

Location of Instruction	Courses are Field-Based						Courses are Cohort-Based					
	Yes		No		Total		Yes		No		Total	
	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*	%	*N*
Course offered on campus via resident instruction												
Yes	57.1	128	37.1	83	94.2	211	22.8	51	71.4	160	94.2	211
No	0.9	2	4.9	11	5.8	13	0.0	0	5.8	13	5.8	13
Total	58.0	130	42.0	94	100.0	224	22.8	51	77.2	173	100.0	224
Course offered off-campus at satellite programs or other campuses												
Yes	26.4	59	9.8	22	36.2	81	15.2	34	21.0	47	36.2	81
No	31.7	71	32.1	72	63.8	143	7.6	17	56.2	126	63.8	143
Total	58.1	130	41.9	94	100.0	224	22.8	51	77.2	173	100.0	224

Table 11a
Teacher Preparation Program Course Delivery Using Distance Education

Course delivery	%	*N*
Courses are offered via distance education	47.7	106
Courses are not offered via distance education	52.3	116
Total	100.0	222

Table 11b
Frequency of Teacher Preparation Program Course Delivery
Using Distance Education

Course Delivery	%	N
Courses offered via DE regularly	64.8	61
Courses offered via DE occasionally	35.2	33
Total	100.0	94

Note: 12 respondents who indicated use of distance education (see Table 11a) did not indicate the frequency of distance education use

Table 12 indicated the type of distance education delivery format that was used by teacher education programs. Twenty-eight programs (30.4%) offered three or more courses on the World Wide Web. Most common were one or two courses that were Web-based (35.8%) or interactive compressed video (32.2%) (Table 12). Print correspondence (17.7%), satellite (15.6%), and e-mail (15.8%) were used to a lesser extent.

Table 12
Distance Education Course Primary Delivery Format

Primary Course Delivery	None		1 – 2 courses		3 or more		Total	
	%	N	%	N	%	N	%	N
Interactive Compressed Video (Pic Tel, V-tel)	46.0	40	32.2	28	21.8	19	100	87
Satellite	72.7	56	15.6	12	11.7	9	100	77
Web-based course	33.8	31	35.8	33	30.4	28	100	92
E-mail	71.0	54	15.8	12	13.2	10	100	76
Print correspondence	70.9	56	17.7	14	11.4	9	100	79

Table 13 shows that all types of distance education course delivery systems are projected to increase within the next three years. The number of courses using interactive compressed video and the World Wide Web is projected to double. If the projections are accurate, nearly 68% of the CTE programs will use the World Wide Web to deliver courses in the near future. The number of satellite, e-mail and traditional print correspondence courses will also increase, but not as much. A few programs reported plans to put all their CTE teacher preparation courses on-line within the next few years. One respondent reported that their four core teacher certification courses were all on line and that both their off-campus students and traditional resident students must take these courses via the World Wide Web.

Table 13
Projections for Number of Courses to Use a Distance Education Delivery Format

Primary Course Delivery Format	None		1 – 2 courses		3 or more		Total	
	%	N	%	N	%	N	%	N
Interactive Compressed Video (Pic Tel, V-tel)	56.8	96	23.1	39	20.1	34	100.0	169
Satellite	76.6	118	11.7	18	11.7	18	100.0	154
Web-based course	31.7	59	36.0	67	32.3	60	100.0	186
E-mail	65.0	102	24.2	38	10.8	17	100.0	157
Print correspondence	79.0	120	15.1	23	5.9	9	100.0	152

CTE Teacher Certification

Instructional Approaches

Table 14 indicates that the instructional approach used most frequently was the traditional lecture or lab complemented by a student teaching semester or quarter. Over four-fifths (83.2%) of the respondents reported using this model either some of the time or all of the time.

The Professional Development School model (National Council for Accreditation of Teacher Education, 2001), where teacher candidates spend 50% of their time in school buildings learning under master teachers, is used at less than half the institutions with any regularity. Forty-one or 19% of 215 programs reporting indicated that they used the Professional Development School (PDS) model all the time. Sixty-six programs (30.7%) use the PDS model some of the time.

Table 14
Frequency, Mean and Standard Deviation of Use of Instructional Approaches by Instructors/Professors in CTE Program Certification

Approach/Method Used	Almost Never used (1)		Used Infrequently (2)		Used some of the time (3)		Used all of the time (4)		Total		
	%	N	%	N	%	N	%	N	M	SD	N
Traditional approach–lecture and laboratory with typical student teaching semester or quarter	8.4	18	8.4	18	41.1	88	42.1	90	3.18	0.91	214
Higher levels of math, science and writing are integrated into the certification curriculum	8.3	18	24.4	53	48.8	106	18.4	40	2.77	0.84	217
50% traditional approach and 50% integration approach	12.7	27	27.4	58	45.3	96	14.6	31	2.62	0.89	212
Professional development school approach (more than 50% of total student time spent in field-based study and practice	26.0	56	24.2	52	30.7	66	19.1	41	2.43	1.07	215

Note: *M* = Grand mean for individual item, *N*= Total number of respondents who responded the statement.

Higher levels of math, science, and writing are modeled all of the time by only 18.4% of the respondent's programs. However, 48.8% of the programs use an integrated approach some of the time.

Program Entry and Exit

Respondents were asked to indicate the cumulative grade point average (GPA) for program entry and program exit, as well as a minimum cumulative GPA required for program transfer. It was assumed that the CTE teacher preparation programs did not have GPA criteria that differed significantly from other teacher preparation programs at the same institution. To identify other criteria used for CTE teacher candidates at either end of their teacher preparation program, an open-ended item collected data about the "other" ways teacher candidates were evaluated.

Table 15 summarizes the commonly used cumulative GPAs for program entry and exit. A further summary of cumulative GPA requirements appears in Appendices C & D. Overall, a 2.5 or higher cumulative GPA on a 4-point scale was the main criterion for program entry and program exit for most programs (82.4% and 85%, respectively). A cumulative GPA of 2.5 was required for CTE teacher certification program entry at over half (59.5%) of the reporting

institutions, which was unchanged over the past 10 years (Lynch, 1990). A GPA of 2.7 or greater is required by only 22.9% of institutions for program entry.

Table 15
Frequency Distribution by GPA Requirements (in 4-point scale) for Program Entry, Program Exit, and Minimum GPA for Program Transfer

Required GPA	Program Entry		Program Exit		Minimum GPA for Transfer	
	%	*N*	%	*N*	%	*N*
2.0–2.40	6.6	15	4.4	10	11.9	27
2.50–2.67	59.5	135	59.5	135	41.4	94
2.70 and higher	22.9	52	25.5	58	18.9	43
Not stated	11.0	25	10.6	24	27.8	63
Total	100.0	227	100.0	227	100.0	227

As found in the program entry criteria, CTE certification candidates generally must earn at least a 2.5 cumulative GPA (59.5% of programs) to successfully complete the degree, with 22.9% of the programs requiring a cumulative GPA of at least 2.7 for program exit. In general, cumulative GPA for both program entry and program exit ranged between 2.5 to 2.67. Ten years ago the average cumulative exit GPA also was a 2.5 for all CTE certification areas (Lynch, 1990).

Variations existed in GPA requirements between program entry and program exit within and among certification areas. Some of the CTE areas such as Family and Consumer Sciences, Agricultural Education, Health Occupations, and Technology Education reported slightly higher GPA for program exit than program entry (Appendix D). The reported GPA for program transfer for all of the colleges or departments were generally slightly lower than program entry or program exit.

Table 16 summarizes the data collected from the 227 respondents about the "other" criteria used for program entry (also see Appendix E). These were compiled into five categories: (1) Academic Requirements, (2) Assessment, (3) Experience, (4) Grade Point Average, and (5) Personal References. An assessment or minimum test scores (41.9%) and Academic Requirements (30%) seemed to be the two major criteria required by the responding colleges and universities for admission to the CTE teacher education programs, while other respondents mentioned GPA (19.1%), Experience (10.6%), and Personal References (16.7%) as requirements for entering their programs.

Table 16
Frequency and Percentage of Response on Other Required Criteria for Program Entry and Program Exit by Criteria Type

Criteria Type[a]	Program Entry				Program Exit			
	Yes		No		Yes		No	
	%	N	%	N	%	N	%	N
Academic Requirement	30.0	68	70.0	159	22.5	51	77.5	176
Assessment	41.9	95	58.1	132	36.6	83	63.4	144
Experience	10.6	24	89.4	203	26.0	59	74.0	168
Grade Point Average	19.1	41	81.9	186	11.5	26	88.5	201
Personal Refereaces	16.7	38	83.3	189	-	-	-	-
Other	2.6	6	97.4	221	3.5	8	96.5	219

[a] The criteria type were developed from a qualitative open-ended responses that indicated additional criteria

Data collected from the 227 respondents about criteria used for program exit also were compiled into four categories: (1) Assessment, (2) Grade Point Average (GPA), (3) Academic Requirements, and (4) Experience. Among the four main criterion types, 36.6% of the respondents used some type of assessment as the primary criterion for successful completion (or exit) of their program. Three other criteria also are used by many colleges and universities to determine successful program completion were Experience (26%), and Academic Requirements (22.5%). Further detail is presented in Appendix F.

Paths to Certification

The bachelor's degree with a major in the specialty area remained the prominent model for certification of CTE teachers in most degree programs (Table 17a & 17b). In addition, most areas of CTE certification made available other routes, such as masters' degrees, post-baccalaureate certificate programs, or acquiring certification through a minor while an undergraduate student.

In particular, Health Occupations and Trade and Industrial used a decidedly different route for many of their students for certification. While the overall numbers of programs reported were low in Health Occupations (*N*=8), less than 40% of the programs used a BS major as the model for certification. Approximately 66% of the programs in Trade & Industrial used the more traditional model of BS major route to certification. At the same time, about 19% of the programs reported giving credit for work and occupational competencies as a way to certify. These two areas did not report any master's degree programs used as a primary model for certification.

A few other programs used a combination of test scores, work experience and coursework to certify a few of their teachers.

Table 17a
Primary Models of CTE by Area and Paths to Certification

Certification Area	Models	%	N[a]
Agricultural Education	BS major	91.0	60
	BS minor	4.5	3
	Masters	3.0	2
	Credit for work/Occu. competencies	1.5	1
	Total	100.0	66
Business	BS major	82.3	42
	BS minor	13.7	7
	Certification only after BS	2.0	1
	Combine tests, courses & experience	2.0	1
	Total	100.0	51
Family & Consumer Sciences	BS major	88.2	60
	BS minor	7.3	5
	Masters	1.5	1
	Certification only after BS	1.5	1
	Credit for work/Occu. competencies	1.5	1
	Total	100.0	68
Marketing	BS major	94.4	17
	BS minor	5.6	1
	Total	100.0	18
Health Occupation	BS major	37.5	3
	Certification only after BS	25.5	2
	BS minor	12.5	1
	Credit for work/Occu. competencies	12.5	1
	Combine tests courses & experience	12.5	1
	Total	100.0	8
Technology Education	BS major	88.0	29
	BS minor	3.0	1
	Masters	3.0	1
	Certification only after BS	3.0	1
	Combine tests courses & experience	3.0	1
	Total	100.0	33
Trade & Industrial	BS major	65.9	31
	Credit for work/Occu. competencies	19.1	9
	BS minor	6.4	3
	Certification only after BS	4.3	2
	Combine tests courses & experience	4.3	2
	Total	100.0	47

[a] *N* can be different than previously reported due to multiple models as specified by program chairs

Table 17b
Frequency of Response Indicating Primary Models of CTE Program

Model	Frequency
BS major	242
BS minor	21
Credit for work/Occu. competencies	11
Certification after BS	7
Combine tests, courses & experience	6
Masters	4

Note: Frequency may exceed N=227 due to multiple response of the models from more than one certification areas within an institution.

Appropriate workplace experience is one of the main factors that enables teachers to establish the integrated curriculum (Mooney, 1999). Lynch (1998) mentioned that the Health Occupations and Trade and Industrial Education areas placed more importance on occupational experience or occupational competency in teacher certification. Those areas still used these models most frequently, but mainly as their secondary model (Table 18a & 18b). In particular, Trade & Industrial programs (*N*=9) used a combination of tests, courses and experience as secondary models to certify (31%). A number of T & I programs (*N*=8) also gave credit for work and occupational competencies.

Occupational experience or occupational competency mainly was used in combination with coursework and testing to certify teachers. Occupational experience, such as years employed as a registered nurse, was more important to the three reporting Health Occupations programs.

Table 18a
Secondary Models of CTE by Area and Paths to Certification

Certification Area	Models	%	N[a]
Agricultural Education	Certification only after BS	28.7	8
	Masters	25.0	7
	BS minor	21.4	6
	Combine tests, courses & experience	10.7	3
	Competencies	7.1	2
	Admit as provisional	7.1	2
	Total	100.0	28
Business	Certification only after BS	40.0	10
	Masters	16.0	4
	BS minor	12.0	3
	Competencies	12.0	3
	Testing/test scores (Teacher)	8.0	2
	BS major	4.0	1
	Combine tests, courses & experience	4.0	1
	Individual program of study	4.0	1
	Total	100.0	25
Family & Consumer Sciences	Certification only after BS	45.8	11
	Competencies	16.6	4
	BS minor	12.5	3
	Masters	8.3	2
	BS major	4.2	1
	Testing/test scores (Teacher)	4.2	1
	Combine tests, courses & experience	4.2	1
	Individual program of study	4.2	1
	Total	100.0	24
Marketing	BS major	27.3	3
	Certification only after BS	27.3	3
	Credit for work/Occu. competencies	18.1	2
	BS minor	9.1	1
	Testing/test scores (Teacher)	9.1	1
	Individual program of study	9.1	1
	Total	100.0	11
Technology Education	BS major	40.0	4
	Masters	20.0	2
	Credit for work/Occu. competencies	20.0	2
	Certification only after BS	10.0	1
	Combine tests, courses & experience	10.0	1
	Total	100.0	10

Table 18a continued...

Certification Area	Models	%	*N*
Trade & Industrial (T&I)	Combine tests, courses & experience	31.0	9
	Credit for work/Occu. competencies	27.6	8
	Certification only after BS	17.2	5
	BS major	6.9	2
	BS minor	6.9	2
	Masters	6.9	2
	Admit as provisional	6.9	1
	Total	100.0	29
Health Occupations	Combine tests, courses & experience	42.8	3
	BS major	14.3	1
	BS minor	14.3	1
	Certification only after BS	14.3	1
	Credit for work/Occu. competencies	14.3	1
	Total	100.0	7

[a] *N* can be different than previously reported due to multiple models as specified by program chairs.

Table 18b
Frequency of Response Indicating Secondary Models of CTE Program

Model	Frequency
Certification after BS	39
Credit for work/Occu. competencies	22
Combine tests, courses & experience	18
Masters	17
BS minor	16
BS major	12
Testing/test scores (Teacher)	4
Admit as provisional	3
Individual program of study	3

Note: Frequency may exceed *N*=227 due to multiple response of the models from more than one certification areas within an institution.

The post-bachelor's certification was mentioned primarily as a secondary model. Although it had a very small representation, it was the model most commonly reported in the areas of Business Education (4.4%) and Family and Consumer Science (4.8%). One respondent reported that the shortage of Family and Consumer Science teachers in their state might influence certification paths and dictate flexibility. In Agriculture, three paths emerged as small but important secondary certification models: the undergraduate minor, the post-bachelor's certification, and the master's degree route.

Credit Requirements in Certification Programs

Figure 11 indicates the average credit hour requirements for baccalaureate degree programs by type of institution. These data showed that an average of 124 semester credits was required for a CTE teacher preparation baccalaureate program (*N*=203 programs reporting). This was less than the 128 semester credits (*N*=257 programs reporting) reported 10 years ago (Lynch, 1990). In 1993, the average number of semester credits earned by students completing a bachelor's degree in education was 135.5 (McCormick, 1999).

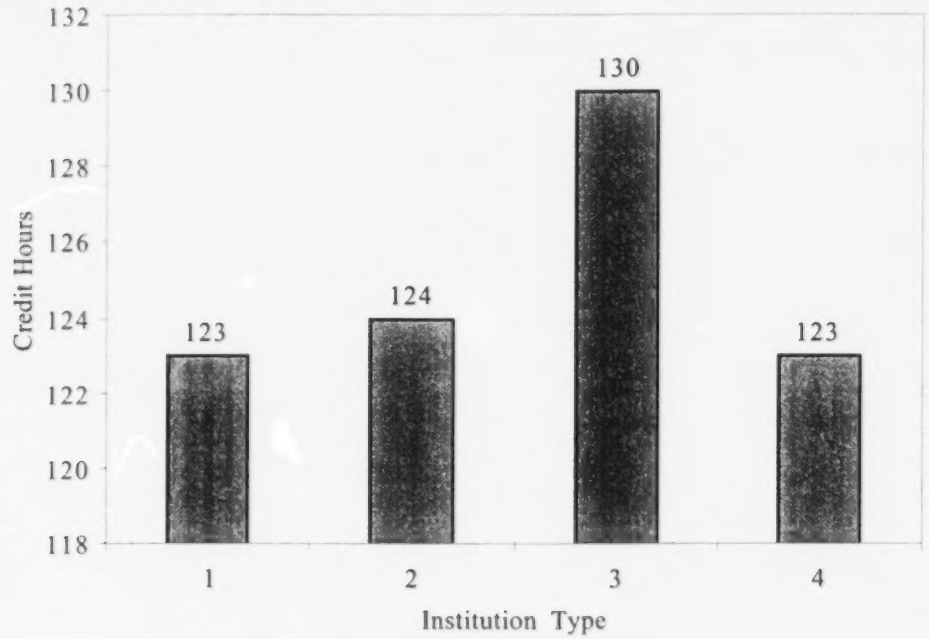

Figure 11. Average Credit Hour Requirement by BS Program (*N*=203). 1=Public Land Grant, 2=Public Non-Land Grant, 3=Independent Private, 4=Church-related.

The credits required for bachelor degrees were similar among institution types. Private institutions had the highest average credit requirements at 130 semester hour credits, followed by a public non-land grant institutions at 124, and public land grant and church-related institutions at 123 each.

Table 19 summarizes the credit hour requirements for the various program areas by curriculum delivery method. CTE preservice programs at all institution types tended to emphasize field-based inquiry (*M*=16 credits) through several courses. Integration strategies were emphasized most at the public institutions, with an average of 7.2 credits at land grant and 6.5 credits at public non-land grant institutions. This represented a substantial increase in ten years, since Lynch (1990) noted that only 3 institutions mentioned a three-credit course on

integration. Field-based inquiry, which is assumed to include student teaching, varied from 18.5 semester credits at a public non-land-grant college or university to only 11 credits at an independent private college or university. The average of about 13 semester credits for field-based inquiry was relatively unchanged in ten years (Lynch, 1990).

Table 19
Credit Hour Requirement by Professional Development Program Area and Institution Type

Professional Development Program/Area	Institution Type														
	Public Land Grant (LG)			Public Non-LG			Independent/ Private			Church Related			Grand Mean		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*[b]
Curriculum development	4.1	4.9	76	5.0	6.6	87	3.8	1.6	12	4.0	1.7	13	4.5	5.5	189
Field-based inquiry	13.9	10.9	87	18.5	39.1	95	11.0	2.7	12	13.1	3.2	15	15.8	27.3	210
History/ Philosophy	3.9	5.0	74	4.3	5.1	77	3.6	1.8	11	2.7	0.6	14	3.9	4.7	177
Integration strategies and techniques	7.2	20.5	121	6.5	15.1	62	4.9	2.8	8	3.0	0.9	9	6.3	15.7	113
Methods of teaching	5.2	4.8	89	5.3	5.1	91	5.2	1.7	12	4.5	1.7	15	5.2	4.6	208
Program planning	4.2	5.4	61	5.5	7.6	71	4.9	4.1	9	3.5	1.6	13	4.8	6.3	155
Using technology in classroom	3.6	4.0	61	4.8	6.0	73	4.8	2.1	12	3.0	1.3	12	4.2	4.9	159
All PDA means	6.7	6.8	90	7.7	9.7	98	5.6	2.7	13	5.1	0.8	15	6.9	7.9	217
Total[a]	42.1	-	-	49.9	-	-	38.2	-	-	33.6	-	-	44.7	-	-
Baccalaureate	123.5	24.9	85	123.8	22.9	91	130.1	16.6	12	122.6	14.7	15	123.9	22.9	203

[a] Sum total of all professional development area means.
[b] Grand means *N*'s are not summative because some respondents did not provide data in some categories.

Often the "other" category was a substantial part of the curriculum and the respondents indicated specific course requirements such as courses in special education, educational psychology, technology, special needs education, and multicultural education or diversity. Many redesigned CTE teacher preparation programs may have integrated this content in other courses. For example, courses in technology or educational media have had their content integrated into methods courses.

Church-related institutions seem to have the lowest credit requirement for certification (M=34), while public non-land grant institutions had the highest (M=50). While the total credit hours required for certification are following a national trend toward reducing credits required to graduate, within and between categories these researchers believe that these data are inflated by 5–10 credit hours. For completion of a certification program, the average for a major that are required (outside of general education credits) is approximately 45 credits.

CTE Teacher Preparation Curriculum

The current Education Reform Movement began in the late 80's in the shadow of the seminal report "*A Nation at Risk*" (1983). In many states, the current reform climate includes minimal competency testing for all first-time teacher certification candidates, elevated GPA requirements for program entry and completion, and proof of technology skills. Legislation, enacted predominately at the individual state level, has ensured many of these changes (National Center for Education Statistics, 1997).

Curricular Change

The Educational Reform Movement has had an impact on CTE teacher preparation programs (Table 20). Among the areas of most pronounced general program change are curriculum and teaching methods. About sixty-five percent of the respondents reported significant changes to their curriculum and 50% reported that the teaching methods had changed "significantly" within their programs. Most respondents indicated that the Educational Reform Movement "significantly" affected their preservice (undergraduate) program (48.5%) and their inservice (graduate) program (33.7%), which served post-baccalaureate students including those already holding a teaching certificate. The adult education program had changed the least due to educational reform since 36.2% noted that their program had not changed.

Legislative influences (Table 21) have also brought some overall changes to the CTE program areas, but not as pronounced as the Educational Reform Movement. Similarly, the respondents perceived significant curriculum changes due to legislative influences (42.4%), teaching methods (19.4%), the inservice program (22.1%), and the preservice program (32.5%). In contrast, the adult education programs appeared to have undergone little change due to legislative influences (41.3%).

Table 20
Respondents' Perceived Level of Change in Career and Technical Education (CTE) Program Areas Due to Educational Reform Movement

Program Area	No Change		Changed Little		Changed Significantly		Total			
	%	N	%	N	%	N	M	SD	%	N
Adult education	36.2	71	46.4	91	17.3	34	1.81	0.71	100.0	196
Curriculum change	4.6	10	30.3	66	65.1	142	2.61	0.58	100.0	218
Teaching method	7.4	16	42.6	92	50.0	108	2.43	0.63	100.0	216
In-service education	16.6	33	49.7	99	33.7	67	2.17	0.69	100.0	199
Pre-service education	11.7	24	39.8	82	48.5	100	2.37	0.68	100.0	206

* Level of change was measured using a three-point Likert type scale indicating: 3=Changed Significantly, 2=Changed little, 1=No change

Legislative influences (Table 21) have also brought some overall changes to the CTE program areas, but not as pronounced as the Educational Reform Movement. Similarly, the respondents perceived significant curriculum changes due to legislative influences (42.4%), teaching methods (19.4%), the inservice program (22.1%), and the preservice program (32.5%). In contrast, the adult education programs appeared to have undergone little change due to legislative influences (41.3%).

Table 21
Respondents' Perceived Level of Change in Career and Technical Education (CTE) Program Areas Due to Legislation

Program Area	Level of Change[a]									
	No Change		Changed Little		Changed Significantly		Total			
	%	N	%	N	%	N	M	SD	%	N
Adult education	50.3	95	41.3	78	8.5	16	1.58	0.64	100.0	189
Curriculum	17.2	35	40.4	82	42.4	86	2.25	0.75	100.0	203
Teaching method	39.3	79	41.3	83	19.4	39	1.80	0.74	100.0	201
In-service education	33.8	66	44.1	86	22.1	43	1.88	0.74	100.0	195
Pre-service education	24.4	48	43.1	85	32.5	64	2.08	0.75	100.0	197

[a] Level of change was measured using a three-point Likert type scale indicating: 3=Changed Significantly, 2=Changed little, 1=No change

Competencies for CTE Teachers

Appendix G is a summary of the competency areas that represent various aspects of the curriculum in CTE teacher education programs. There were 38, 5-point Likert scale items. The following scale was used: 1 = not at all important, 2 = low importance, 3 = somewhat important, 4 = important, and 5 = very important. The competency areas were derived from the National Board for Professional Teaching Standards (1997) and included training preservice teachers to design programs that emphasized preparation to teach experiential learning and workplace readiness; to use assessments; to guide students in career decision-making techniques, learning, human development, social development (teamwork and collaborative skills), and managing multiple life roles; and to form their own collaborative agreements and partnerships with the various elements of the community.

Although there were a total of 227 respondents, the actual number varied for each item. Most items had at least 200 responses. All item means were higher than 3 points, which indicated that there was a tendency to consider the competency in each item as somewhat important in the curriculum. The standard deviations ranged between .55 and 1.02, indicating that the level of importance does not vary much among respondents. Respondents rated all but eleven competency areas with a tendency to be important or higher.

The respondents rated the competency area "designing meaningful instructional tasks based on the real world problems," most important with a mean of 4.7 as shown in Appendix G. The second highest mean was "advancing student learning" (M =4.6). Both of these responses indicated a clear strong commitment to understand and meet the learning needs of students. Other competency areas that rated high were technology use (M =4.6), teamwork skills (M =4.5),

staying abreast of change (M =4.5) and leadership skills (M =4.5). These are the "broad" human capacity skills so valued in today's workplace. In contrast, "negotiation skills" had the lowest mean (M =3.6) and "preparing to manage personal finances" was second lowest with a mean of 3.6. Two items ranked third lowest with means of 3.7 each: "understanding labor trends and projections" and "family partnerships." Although they had the lowest means, these items still had a tendency to be important in the preservice curriculum as indicated by the respondents.

Importance of Assessment Skills

At least seven of the Likert scale items related to the importance of student assessment in teacher preparation programs. Assessment was considered a skill important for CTE teachers (Phelps & Hanley-Maxwell, 1997) and this study confirmed the same. Teachers must be able to monitor and assess their students' career interests, aptitudes, informal work, and academic skills using various assessment instruments and techniques. The present study reports that "assessing student aptitudes" and "assessing students based on occupational standards" ranked in the lowest quadrant (M=3.7 and M=3.8 respectively) indicating that they had a tendency to be important, but perhaps not as emphasized in teacher preparation programs (Table 22). These competencies, often thought to be a motivator for specific skill acquisition, were two competencies that the authors predicted the respondents would rank higher given the current emphasis in documents of the Standards for National Board Certification (1997) and the Professional Standards of the National Council for Accreditation of Teachers (2001).

Table 22
Grouped Means and Standard Deviations of Perceived Importance of Assessment Skills in the Curriculum

Competency Area—Assessment Skills [a]	*M*	*SD*	*N*
Using authentic assessment	4.36	.85	222
Adapting programs for special needs students	4.19	.75	204
Using assessment as an analytical tool for students	4.18	.75	222
Assessing students in a work context	4.07	.84	224
Assessing students based on occupational standards	3.76	1.02	212
Assessing student aptitudes	3.68	.97	224

[a] Perceived Importance was measured by using 5-point Likert type scale: 5=Very Important, 4=Important, 3=Somewhat Important, 2=Low Importance, 1=Not At All Important.

Skills for Collaborative Agreements, Teamwork and Partnerships

Other highly rated skills were the "soft" skills deemed critical to success in the workplace: teamwork, leadership, and working with people from diverse backgrounds (Stasz & Brewer, 1999; Standards for National Board Certification, 1997; National Council for Accreditation of Teachers, 2001). The ability to work collaboratively with businesses, community and colleagues was also considered a skill important for new teachers, since the ability to form collaborations with stakeholders will be the key to developing the relationships needed to bring the workplace experiences into their programs (Stasz & Brewer, 1999; Standards for National Board Certification, 1997). Within the school environment, CTE teachers must be able to work with academic content teachers to plan an integrated curriculum that will provide an appropriate, high quality context-based experience (Finch, et al., 1999). Additionally, teamwork and leadership skills were valued in the workplace. The items that related to collaborative skills had means ranging from 4.5 to 3.9, indicating their importance in today's CTE teacher preparation curriculum (Table 23). However, two related items mentioned earlier were among the lowest with respective means of 3.7 and 3.65: "preparing for a larger role in the community" and "family partnerships."

Table 23
Means and Standard Deviations of Perceived Importance of Collaborative Skills in the Curriculum

Competency Area—Collaborative Skills [a]	*M*	*SD*	*N*
Teamwork skills	4.54	.60	225
Leadership skills	4.48	.70	225
Working with people from diverse backgrounds	4.41	.63	227
Human relations	4.40	.62	225
Collaborative partnership with business and other industries	4.37	.74	226
Collaborative partnerships with other faculty	4.24	.74	226
Developing coping skills	4.11	.79	226
Community partnerships	4.02	.80	224
Collaborative partnership with families	3.97	.88	227
Understanding social and cultural norms	3.94	.84	226
Collaborative partnerships with other educational institutions	3.92	.78	220
Preparing for a larger role in communities	3.73	.86	226
Family partnerships	3.65	.91	225

[a] Perceived importance was measured by using 5 point Likert type scale: 5=Very Important, 4=Important, 3=Somewhat Important, 2=Low Importance, 1=Not At All Important.

Skills for the Integration of Academics into the Occupational Curriculum

Preservice programs must prepare teachers who can implement an integrated standards-based curriculum (Mooney, 1999). The earlier section on Credit Requirements in CTE Certification Programs indicated that the curricular emphasis in the area of integration has increased from non-existent ten years ago to an average of six credits in the programs of these respondents.

With the community as the classroom, experiential, inquiry-based learning enables students to make the connection between theory and practice (Pribbenow, 1998). Using curriculum from beyond the classroom with updated information about the workplace is an important source for the integration of academic and technical skills and concepts into the curriculum (Phelps, 1998). This importance is seen in the curricular emphasis (M=4.4) of "academic and vocational integration" and "Coordination of school and work-based learning" (M=4.2) (Table 24).

Table 24
Means and Standard Deviations of Perceived Importance of Curriculum Integration Skills for Preservice Teachers

Competency Area--Curriculum Integration Skills*	*M*	*SD*	*N*
Designing meaningful instructional tasks based on real world problems	4.72	.55	225
Staying abreast of change	4.53	.65	226
Integration of academic areas & vocational education	4.44	.70	226
Coordination of school and work-based learning	4.17	.78	226
Articulation of secondary and post-secondary learning	4.06	.80	227
Simulating workplace environments	3.92	.93	223
Identifying career paths	3.80	.87	225
Understanding labor trends and projections	3.65	.93	225

*Perceived importance was measured by using 5 point Likert type scale: 5=Very Important, 4=Important, 3=Somewhat Important, 2=Low Importance, 1=Not At All Important.

The item "Articulation of secondary and post-secondary learning" with a mean of 4.1 also indicates relative importance of understanding the influences of higher education on the curriculum. Two other areas related to maintaining a valid curriculum were "Staying abreast of change" (M=4.5), which respondents tended to rate very important, and "Understanding labor trends and projections," which was rated important with a mean of 3.65 (Table 23). Two other areas that respondents tended to consider "important" relate to career awareness are "Simulating workplace environments," which had a mean of 3.9, and "Identifying career paths" with a mean of 3.7. Both items involved helping students understand career progressions.

SUMMARY

Both CTE and academic content educators must be responsive to the changing workplace and global economy. This will require more collaboration to produce a valid, integrated curriculum, use of alternate assessments, and the skills to work with diverse colleagues and stakeholders. As CTE teacher preparation prepares to meet these challenges, it is important to document the characteristics of preservice and inservice programs. The following is a summary of the major findings of this study:

- The present study initially located 385 institutions offering CTE teacher certification programs.
- Two CTE teacher certification programs reported that they were just getting started, but 9 reported being discontinued or phased out. For every new program, there seems to be at least 4 programs being phased-out.
- A College or Department of Education administers most CTE teacher preparation programs.
- The land grant and non-land grant public universities tended to have more students seeking CTE teacher certification at both the undergraduate and post-graduate levels than the private and church-related schools, but the private and church-related institutions have undergraduate certification programs at the bachelor's level that often are comparable in size to the land grant and non-land grant public universities.
- CTE teacher certification programs are using, or project using in the future, the World Wide Web and distance course delivery. All types of distance education course delivery are projected to double in three years.
- A cumulative GPA of 2.5 is required for teacher certification program entry at over half (59.5%) of the programs. A GPA of 2.7 or higher is required for admission to the program by 22.9% of institutions. This represents a shift toward higher academic requirements since only about 9% of the CTE teacher preparation programs had such a high requirement 10 years ago. Other admission criteria such as various assessments or occupational experience were common.
- Technology Education is a relatively new area of CTE education that emerged in the 1990's. This is a transformation of the Industrial Arts area.
- The Health Occupations and Trade and Industrial Education areas still value occupational experience or occupational competency for teacher certification, but mainly as part of the criteria in their secondary certification model.
- A post-bachelor's certification option is most common in the areas of Business Education and Family and Consumer Science. In Agriculture, three models emerged as small but important secondary certification models: the undergraduate minor, the post-bachelor's certification, and the master's degree.

- The Professional Development School Model is used at less than half the institutions on a regular basis. The amount of field-based inquiry has remained consistent at about 13 semester credits over the past 10 years.

- The Educational Reform movement has had an important impact on the curriculum and teaching methods. Most respondents indicated that educational reform affected their preservice program more than the inservice program.

- CTE teacher educators with administrative responsibility perceived that their programs had changed significantly due to legislative influences. However, the adult education component of the program appeared to be relatively unchanged by legislative influences.

- The strongest emphases in the preservice programs, as evidenced by the highest rated Likert scale items, were in the following areas: "designing meaningful instructional tasks based on the real world problems," "advancing student learning," "technology use," "teamwork skills," "staying abreast of change," and "leadership skills."

- Academic and vocational integration is an important curricular emphasis in CTE teacher preparation programs. This area was hardly mentioned ten years ago in the Lynch study (1990) and now occupies an average of 6 credits in a CTE teacher preparation curriculum.

- The items "assessing student aptitudes" and "assessing students based on occupational standards" ranked in the lowest quadrant indicating that they are somewhat important, but not as emphasized as other competencies in CTE teacher preparation programs.

DISCUSSION

This report provides data regarding the status of career and technology teacher preparation that is offered in the United States system of higher education. The data were collected to describe CTE teacher preparation programs as they currently exist in the US. The intent of this study was to gather comprehensive information from all of the institutional programs that teach CTE in any form and to note the direction of CTE teacher preparation. In 1990, Lynch presented data from 78 institutions and 257 programs. In the present study, 385 schools and 673 programs were identified to have some form of CTE teacher preparation. In the following paragraphs a discussion is presented regarding the findings of this study, the implications for changes in the profession, and indicators for the future. The purpose of this discussion is to identify the key points as a means to initiate future discussions.

The Status of Career and Technology Education Programs

Although he sampled only the larger CTE teacher preparation programs, Lynch (1990) actually identified 432 institutions reported to have vocational teacher education programs. In the search for CTE teacher preparation institutions in 2000, this study located 385 colleges or institutions having a CTE teacher preparation program. The present study confirms the decline in capacity to produce CTE teachers (Camp, 1998) in a time of increasing demand (US Department of Labor, 2000). If this number is truly accurate, this represents at least an 11% decrease in CTE teacher education programs during the past 10 years. In the actual data collection process for this study, for each new program there were about four institutions that phased out their programs. This finding should represent a major concern to the profession.

The database for this study was developed using data collected from a wide range of institutions. A review of the institutions found in Appendix A indicates a wide range of colleges and universities that responded to this study. All types of institutions are important in preparing CTE teachers. Overall, land grant and non-land grant public institutions produced the vast majority of teachers that work in CTE compared to independent and church-related institutions. However, this comprehensive study found that while church-related and independent institutions enrolled relatively large numbers of students, they graduate few students who actually teach in CTE areas.

When comparing all teaching areas and all institutions, about 2.2 FTE faculty support a preservice teacher preparation program, while the corresponding number of FTE for an inservice program is 1.94. The roles and responsibilities for working with existing and future teachers appear to be similar for teacher educators at various institutions.

Curriculum and Course Delivery

Increasingly, it appears that the profession is looking toward more distance education as a means to deliver education. While this is a national trend in many other areas, it might surprise some the extent to which the profession is moving in this direction. In the next three years, the number of Web based courses and interactive courses is expected to increase by at least one-third. The question then becomes how will the profession develop the skills necessary to benefit from distance education.

The traditional approach of lecture and laboratory method of instruction is still preferred by nearly 40% of teacher education departments. Methods that use an integrated approach are used sparingly. The professional development school model of 50% or more of field-based instruction is not used often. Newer field-based, building-based approaches to instruction need to be reviewed and considered as alternatives to increase the relevance and adaptability of the curriculum to meet expectations of the workplace. Clearly there are a number of inservice opportunities to develop and enhance the methodologies of teacher educators. Given the extent to which teacher educators are entrenched in the traditional models, perhaps newer methods should be targeted toward younger and innovative teacher educators.

The various educational reforms have had an impact on CTE programs especially in the area of curriculum change. More than 60% of the respondents indicated those reforms had a significant impact on the way the curriculum is offered. Teaching methods also have been impacted as a result of educational reforms. Clearly the respondents, who were all CTE program administrators, indicated that change is occurring to programs due to the educational reform movement. This is a very positive finding that should be reassuring to policy makers and those who work with educational reforms. Change is happening and legislation is influencing the way teaching methods are being taught in this country.

The overall amount of field-based experience has remained stable over the past ten years. Interestingly, in one area of the study that deals with credit hours of instruction, respondents indicated that integration strategies and techniques were the second most frequent credit hour requirement. While this is a very positive sign, in other parts of the study, respondents indicated that integration is not employed frequently in methods courses. These inconsistencies need to be resolved in further studies and investigations.

Program and Certification Requirements

Grade point average (GPA), a criterion used by state systems of education and colleges and universities to screen and evaluate students, has become increasingly important for CTE teacher candidates. In the statistical report "Monitoring School Quality: An Indicators Report (Mayer, Mullens & Moore, 2000)," several studies are summarized that "show that students learn more from teachers with strong academic skills (p.5)." This report continues by noting that many of the factors that contribute to exemplary classroom performance are not easily quantifiable, but overall the report supports the premise that teachers with stronger academic records have higher achieving students.

The last ten years demonstrated that the 2.5 cumulative GPA remained a main criterion for CTE teacher preparation program entry or exit. Compared to ten years ago (Lynch, 1990), it appears that there has been movement toward the 2.75 cumulative GPA for program entry. Ten years ago, from 22% to 31% of the CTE teacher preparation program areas accepted a GPA between 2.0 and 2.4. The present study indicated that only 6.6% of all CTE teacher preparation programs now accept a GPA that low. The present study indicated that 22.9% of the programs require a GPA of 2.7 or higher, where only 6% to 13% of the CTE teacher preparation programs had such a high requirement ten years ago. This movement toward a higher GPA could be fueled by legislative influences, since some states, i.e., Pennsylvania, are currently phasing in a 3.0 GPA for program exit in all areas of teacher certification.

Historically, CTE has prided itself in the experiential base of educators working in the profession. This study revealed that only about 10% of the programs required work experience for program entry and about 25% required work experience for program completion. In the future, the area of workplace skill needs to be evaluated to determine which skills and experiences CTE educators need to have to maintain educational standards for technical competence (Stasz and Brewer, 1999).

According to the data compiled in this study, the primary model for students to obtain their certification is the undergraduate baccalaureate degree program. The trend for the secondary path to certification is to obtain the certificate after the undergraduate baccalaureate degree program is completed.

Competencies for CTE Teachers

Respondents in this study indicated a clear and strong commitment to student learning. Although not all reporting programs are fully credentialed, the respondents rated competencies for CTE curricula, which were largely derived from the National Board for Professional Teaching Standards (1997) document "Vocational education standards for national board certification." Respondents rated over 60% of these competencies to be important in the development of CTE teachers. As a group, they felt that teamwork, staying abreast of change, and leadership skills were important competencies needed in the workforce. Moreover these respondents seem to be in concert with the latest literature indicating strong support for themes like academic integration, authentic assessment, collaborative partnerships and the importance of assessing students in a work context (National Council for Accreditation of Teacher Education, 2001; Mooney, 1999; Stasz & Brewer, 1999; National Board for Professional Teaching Standards, 1997).

IMPLICATIONS

This study was a serious attempt to determine the status of CTE teacher preparation programs throughout the United States. The study represents a first step in discovering the status of CTE teacher preparation programs, as it is a brief snapshot that needs more investigation to better understand the intricacies and complexities of CTE teacher preparation programs.

As a result of this study, there are several challenges presented to CTE teacher educators. First, there appears to be a decline in the number of programs offering CTE teacher preparation, so ensuring that the capacity exists to produce CTE teachers at a time of growing demand is an important issue for the profession. Second, the academic criteria are rising for all teacher candidates and CTE teacher preparation programs must be able to recruit students into their programs who desire to meet these academic standards.

The area of integration and whether or not it is used appears to have conflicting data in this study. Thus, a third challenge facing CTE teacher preparation programs is that today's CTE teachers need to understand the integration of academic and technical skills. The basis of this challenge is that rapid technological change in the workplace means that CTE teacher preparation also must utilize new skills and their work context. Technological change in some areas has been so rapid that the skills are almost a moving target (Stasz & Brewer, 1999). High school students are expected to reach a higher level of academic skill, especially in areas of reading and math. In addition, the skill set that includes interpersonal skills and teamwork has been recognized as an important area by the National Board for Professional Teaching Standards (1997) and by credentialing bodies such as NCATE (2001), possibly in response to the changing workplace.

Lastly, many of the programs offer teacher education in a very traditional manner. The traditional student teaching semester remains virtually unchanged despite the fact that many of the respondents reported using the professional development school model. With the increase in projection for distance education courses, CTE teacher educators must discern how to work within the distance education framework to enhance their CTE teacher preparation programs. Distance education will have less face-to-face contact with teacher candidates; however, it can help resolve dissemination and access problems. Therefore, distance education within a teacher preparation program should be positioned either within a course or as the basis for a course to optimize the technology.

These CTE program administrators seemed to be knowledgeable and supportive of newer competencies that potentially foster the positive growth and development of students within their programs. Educational reforms and legislation have had an impact on these programs and their curricula. Like most of education, the CTE profession is in a transitional period and is still forming new models. Certainly more research and investigation are needed if the profession is interested in obtaining a clearer picture of the specific aspects of teacher education programs for CTE.

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Appendix A RESPONDENTS BY INSTITUTION[a] AND PROGRAM AREAS

State/Institution	Respondents By Institution[b]		Respondents by Program Areas								
	No.	%	AG	BE	FCS	HO	MK	TE	T&I	Other	Total
Alabama											
University of Montevallo, Montevallo	1	0.4	-	-	1	-	-	-	-	-	1
Auburn University, Auburn	2	0.9	2	-	-	-	-	-	-	-	2
Arkansas											
Southern Arkansas University, Magnolia	2	0.9	2	-	-	-	-	-	-	-	2
Henderson State University, Arkadelphia	2	0.9	-	1	1	-	-	-	-	-	2
Harding University, Searcy	1	0.4	-	-	1	-	-	-	-	-	1
University of Arkansas, Pine Bluff	4	1.8	1	2	-	-	-	-	1	-	4
Arizona											
University of Arizona, Tucson	2	0.9	1	-	1	-	-	-	-	-	2
California											
California State University, Long Beach	1	0.4	-	-	-	-	-	-	-	1	1
The Master's College, Santa Clarita	2	0.9	-	-	2	-	-	-	-	-	2
California State Polytechnic University, Pomona	1	0.4	1	-	-	-	-	-	-	-	1
California State University, Fresno	2	0.9	1	-	1	-	-	-	-	-	2
California State University, San-Bernardino	1	0.4	-	-	-	-	-	1	-	-	1
Colorado											
Colorado State University, Fort Collins	1	0.4	-	-	-	-	-	-	-	1	1
Connecticut											
University of Connecticut, Storrs	1	0.4	1	-	-	-	-	-	-	-	1
Delaware											
University of Delaware, Newark	1	0.4	1	-	-	-	-	-	-	-	1
Florida											
Florida State University, Tallahassee	1	0.4	-	-	1	-	-	-	-	-	1
University of West Florida, Pensacola	1	0.4	-	-	-	-	1	-	-	-	1
University of Florida, Gainesville	1	0.4	1	-	-	-	-	-	-	-	1
Florida International University, Miami	2	0.9	-	-	-	1	-	1	-	-	2
University of South Florida, Tampa	1	0.4	-	-	-	-	-	-	1	-	1
University of Central Florida, Orlando	1	0.4	-	-	-	1	-	-	-	-	1

Appendix A. (cont.)

State/Institution	Respondents By Institution		Respondents by Program Areas[b]								
	No.	%	AG	BE	FCS	HO	MK	TE	T&I	Other	Total
Georgia											
Berry College, Mount Berry	1	0.4	-	-	1	-	-	-	-	-	1
Georgia State University, Atlanta	1	4	-	-	-	1	-	-	-	-	1
Georgia Southern University, Statesboro	1	4	-	-	1	-	-	-	-	-	1
University of Georgia, Athens	2	9	1	-	-	-	-	1	-	-	2
Fort Valley State University, Fort Valley	1	0.4	1	-	-	-	-	-	-	-	1
Valdosta State University, Valdosta	1	0.4	-	1	-	-	-	-	-	-	1
Hawaii											
University of Hawaii, Honolulu	1	0.4	-	-	-	-	1	-	-	-	1
Iowa											
Iowa State University	2	0.9	2	-	-	-	-	-	-	-	2
Idaho											
Idaho State University, Pocatello	1	0.4	-	-	-	-	-	-	-	-	NS[c]
University of Idaho, Moscow	2	0.9	-	-	1	-	-	1	-	-	2
Illinois											
Western Illinois University, Nacomb	1	0.4	-	-	-	-	-	-	1	-	1
Illinois State University,	1	0.4	-	-	-	-	1	-	-	-	1
University of Illinois, Champaign	1	0.4	1	-	-	-	-	-	-	-	1
Northern Illinois University, De Kalb	2	0.9	-	-	2	-	-	-	-	-	2
Bradley University, Peoria	1	0.4	-	-	1	-	-	-	-	-	1
Indiana											
Ball State University, Muncie	1	0.4	-	-	-	-	1	-	-	-	1
Indiana State University, Terre Haute	1	0.4	-	-	1	-	-	-	-	-	1
Purdue University, West Lafayette	2	0.9	1	-	-	-	-	1	-	-	2
Kansas											
Kansas State University, Manhattan	2	0.9	1	-	1	-	-	-	-	-	2
Pittsburg State University, Pittsburg	1	4	-	-	1	-	-	-	-	-	1
Kentucky											
University of Louisville, Louisville	1	0.4	-	-	-	-	-	1	-	-	1
University of Kentucky, Lexington	2	0.9	1	-	1	-	-	-	-	-	2
Murray State University, Murray	3	1.3	1	-	-	-	1	-	1	-	3
Western Kentucky University, Bowling Green	3	1.3	1	-	1	-	-	-	1	-	3

Appendix A. (cont.)

State/Institution	Respondents By Institution		Respondents by Program Areas [b]								
	No.	%	AG	BE	FCS	HO	MK	TE	T&I	Other	Total
Louisiana											
University of Southern Louisiana, Lafayette	1	0.4	-	-	1	-	-	-	-	-	1
University of Louisiana de Lafayette, Lafayette	1	0.4	-	-	-	-	-	-	1	-	1
Louisiana State University, Baton Rouge	2	0.9	1	-	1	-	-	-	-	-	2
Grambling State University, Grambling	1	0.4	-	-	-	-	-	-	1	-	1
Louisiana Tech. University, Ruston	1	0.4	1	-	-	-	-	-	-	-	1
Massachusetts											
University of Massachusetts, Amherst	1	0.4	1	-	-	-	-	-	-	-	1
Framingham State University, Framingham	1	0.4	-	-	1	-	-	-	-	-	1
Westfield State College, Westfield	1	0.4	1	-	-	-	-	-	-	-	1
Maryland											
University of Maryland, Eastern Shore	1	0.4	-	-	-	-	-	1	-	-	1
Michigan											
Eastern Michigan University, Ypsilanti	1	0.4	-	-	-	-	-	-	1	-	1
Michigan State University, East Lansing	1	0.4	-	-	1	-	-	-	-	-	1
Western Michigan University, Kalamazoo	1	0.4	-	-	1	-	-	-	-	-	1
Andrews University, Berrien Springs	1	0.4	-	-	-	-	-	-	1	-	1
Northern Michigan University, Marquette	1	0.4	-	1	-	-	-	-	-	-	1
Minnesota											
University of Minnesota, St. Paul	2	0.9	1	-	-	-	1	-	-	-	2
Winona State University, Winona	1	0.4	-	1	-	-	-	-	-	-	1
Minnesota State University, Mankato	1	0.4	-	-	-	-	-	1	-	-	1
Saint Cloud State University, Saint Cloud	1	0.4	-	-	-	-	-	1	-	-	1
Bemidji State University, Bemidji	1	0.4	-	-	-	-	-	1	-	-	1
Missouri											
Northwest Missouri State University, Maryville	1	0.4	-	-	1	-	-	-	-	-	1
University of Missouri, Columbia	2	0.9	2	-	-	-	-	-	-	-	2
Fontboone College, St. Louis	1	0.4	-	-	1	-	-	-	-	-	1
Lindenwood College, Jefferson	1	0.4	-	1	-	-	-	-	-	-	1
College of Ozarks, Point Lookout	2	0.9	-	1	1	-	-	-	-	-	2
Southwest Missouri State University, Springfield	1	0.4	-	1	-	-	-	-	-	-	1

Appendix A. (cont.)

State/Institution	Respondents by Institution		Respondents by Program Areas[b]								
	No.	%	AG	BE	FCS	HO	MK	TE	T&I	Other	Total
Mississippi											
Univ. of Southern Mississippi, Hattiesburg	1	0.4	-	-	-	-	-	1	-	-	1
Montana											
Montana State University, Bozeman	2	0.9	1	-	-	1	-	-	-	-	2
North Carolina											
North Carolina A&T State University Greensboro	2	0.9	2	-	-	-	-	-	-	-	2
Campbell University, Buies Creek	1	0.4	-	-	1	-	-	-	-	-	1
Meredith College, Raleigh	1	0.4	-	-	1	-	-	-	-	-	1
North Carolina State University, Raleigh	3	1.3	1	-	-	-	-	1	1	-	3
East Carolina University, Greenville	1	0.4	-	1	-	-	-	-	-	-	1
Fayetteville State University, Fayetteville	1	0.4	-	1	-	-	-	-	-	-	1
Appalachian University, Boone	2	0.9	1	-	1	-	-	-	-	-	2
North Carolina Central University	1	0.4	-	-	1	-	-	-	-	-	1
North Dakota											
Valley City State College, Valley City	2	0.9	-	-	-	-	-	2	-	-	2
North Dakota State University, Fargo	1	0.4	1	-	-	-	-	-	-	-	1
University of North Dakota, Grand Forks	1	0.4	-	-	-	-	-	1	-	-	1
Minot State University, Minot	1	0.4	-	1	-	-	-	-	-	-	1
Nebraska											
University of Nebraska, Lincoln	2	0.9	1	-	1	-	-	-	-	-	2
University of Nebraska, Kearney	1	0.4	-	1	-	-	-	-	-	-	1
Chadron State College, Chadron	2	0.9	-	-	1	-	-	-	1	-	2
New Hampshire											
University of New Hampshire, Durham	1	0.4	1	-	-	-	-	-	-	-	1
New Jersey											
Montclair University, Upper Montclair	1	0.4	-	-	-	-	1	-	-	-	1
New Mexico											
New Mexico State University, Las Cruces	1	0.4	1	-	-	-	-	-	-	-	1
Western New Mexico University, Silver City	1	0.4	-	1	-	-	-	-	-	-	1
Eastern New Mexico University, Portales	1	0.4	-	-	1	-	-	-	-	-	1
Nevada											
University of Nevada, Las Vegas	1	0.4	-	-	-	-	-	1	-	-	1
University of Nevada, Reno	1	0.4	-	-	-	-	-	1	-	-	1

Appendix A. (cont.)

State/Institution	Respondents by Institution		Respondents by Program Areas[b]								
	No.	%	AG	BE	FCS	HO	MK	TE	T&I	Other	Total
New York											
Marymont College, Tarrytown	1	0.4	-	-	1	-	-	-	-	-	1
New York City Tech. College, Brooklyn	1	0.4	-	-	-	-	-	1	-	-	1
State University of New York, Oswego	1	0.4	-	-	-	-	-	1	-	-	1
State University of New York, Buffalo	1	0.4	-	-	-	-	-	-	1	-	1
Cornell University of New York, Ithaca	1	0.4	-	-	-	-	-	1	-	-	1
Ohio											
Mount Vernon Nazarene College, Mount Vernon	1	0.4	-	-	1	-	-	-	-	-	1
Ohio State University, Columbus	3	1.3	1	-	1	-	-	1	-	-	3
Bowling Green University, Bowling Green	2	0.9	-	-	1	-	1	-	-	-	2
Kent State University, Kent	1	0.4	1	-	-	-	-	-	-	-	1
University of Akron, Akron	1	0.4	-	-	-	-	-	1	-	-	1
Youngstown State University, Youngstown	1	0.4	-	1	-	-	-	-	-	-	1
Ashland University, Ashland	2	0.9	-	1	1	-	-	-	-	-	2
Wright State University, Wright	1	0.4	-	-	-	-	-	-	-	1	1
University of Rio Grande, Rio Grande	1	0.4	-	-	-	-	-	-	-	1	1
Ohio University, Athens	1	0.4	-	-	1	-	-	-	-	-	1
Ohio Northern University, Ada	1	0.4	-	-	-	-	-	1	-	-	1
Oklahoma											
Northeastern State University, Tahlequah	2	0.9	-	-	-	-	-	-	-	-	NS[c]
University of Central Oklahoma, Edmond	2	0.9	-	-	-	-	1	-	1	-	2
Panhandle State University, Goodwell	1	0.4	1	-	-	-	-	-	-	-	1
Oklahoma State University, Stillwater	6	2.6	5	-	-	-	-	-	1	-	6
East Central University, Ada	1	0.4	-	-	1	-	-	-	-	-	1
Oregon											
Oregon State University, Corvallis	2	0.9	1	-	1	-	-	-	-	-	2
Pennsylvania											
Robert Morris College, Moon Township	2	0.9	1	1	-	-	-	-	-	-	2
Indiana University of Pennsylvania, Indiana	1	0.4	-	-	1	-	-	-	-	-	1
Mercyhurst College, Erie	1	0.4	-	-	1	-	-	-	-	-	1
Penn State University, University Park	2	0.9	1	-	-	1	-	-	-	-	2
University of PA, Bloomsburg	1	0.4	-	1	-	-	-	-	-	-	1
Marywood College, Scranton	1	0.4	-	-	1	-	-	-	-	-	1
Delaware Valley College, Doylestown	1	0.4	1	-	-	-	-	-	-	-	1
Temple University, Philadelphia	2	0.9	1	-	-	-	1	-	-	-	2
Gwynedd-Mercy College, Gwynedd Valley	1	0.4	-	-	-	-	1	-	-	-	1

Appendix A. (cont.)

State/Institution	Respondents by Institution		Respondents by Program Areas[b]								
	No.	%	AG	BE	FCS	HO	MK	TE	T&I	Other	Total
South Carolina											
Winthrop University, Rock Hill	1	0.4	-	-	1	-	-	-	-	-	1
South Carolina State University, Orangeburg	1	0.4	-	-	1	-	-	-	-	-	1
Clemson University, Clemson	3	1.3	1	-	-	-	-	-	2	-	3
South Dakota											
South Dakota State University, Brookings	2	0.9	1	-	1	-	-	-	-	-	2
Tennessee											
Middle Tennessee State Univ., Murfreesboro	1	0.4	-	-	-	-	-	1	-	-	1
Tennessee State University, Nashville	1	0.4	-	-	1	-	-	-	-	-	1
University of Tennessee, Knoxville	1	0.4	1								1
Tennessee Tech. University, Cookville	1	0.4	-	-	1	-	-	-	-	-	1
Texas											
Stephen F. Austin State University, Nacogdoches	1	0.4	-	-	1	-	-	-	-	-	1
University of North Texas, Denton	1	0.4	-	1	-	-	-	-	-	-	1
Texas Women's University, Denton	1	0.4	-	-	1	-	-	-	-	-	1
Tarleton State University, Stephenville	2	0.9	1	-	1	-	-	-	-	-	2
Sam Houston State University, Huntsville	2	0.9	1	-	-	-	-	-	1	-	2
Texas A&M University, College Station	2	0.9	2	-	-	-	-	-	-	-	2
Southwest Texas State University, San Marcos	2	0.9	1	-	1	-	-	-	-	-	2
Texas Tech. University, Lubbock	1	0.4	-	-	1	-	-	-	-	-	1
SUL Ross State University, Alpine	1	0.4	-	-	-	-	-	-	1	-	1
Texas A&M University, Kingsville	2	0.9	2	-	-	-	-	-	-	-	2
Utah											
Utah State University, Logan	2	0.9	1	-	1	-	-	-	-	-	2
Brigham Young University, Provo	2	0.9	-	-	1	-	-	1	-	-	2
Virginia											
Old Dominion University, Norfolk	1	0.4	-	-	-	-	-	1	-	-	1
Virginia State University, Petersburg	2	0.9	-	1	1	-	-	-	-	-	2
VPI & State U., Blacksburg	1	0.4	-	-	-	-	-	1	-	-	1
Virginia Tech University	3	1.4	1	-	1	-	1	-	-	-	3
Radford University, Radford	1	0.4	-	1	-	-	-	-	-	-	1
Liberty University, Lynchburg	1	0.4	-	-	1	-	-	-	-	-	1
Washington											
Washington State University, Pullman	1	0.4	1	-	-	-	-	-	-	-	1

Appendix A. (cont.)

State/Institution	Respondents by Institution		Respondents by Program Areas[b]								
	No.	%	AG	BE	FCS	HO	MK	TE	T&I	Other	Total
Wisconsin											
University of Wisconsin, Platteville	1	0.4	1	-	-	-	-	-	-	-	1
University of Wisconsin, River Falls	1	0.4	1	-	-	-	-	-	-	-	1
University of Wisconsin-Stout, Menomonie	2	0.9	-	-	-	-	-	2	-	-	2
West Virginia											
West Virginia Institute of Tech., Montgomery	1	0.4	-	-	-	-	-	-	-	-	NS[c]
West Virginia University, Morgantown	1	0.4	1	-	-	-	-	-	-	-	1
Concord College, Athens	1	0.4	-	1	-	-	-	-	-	-	1
Davis & Elkins College, Elkins	1	0.4	-	1	-	-	-	-	-	-	1
Shepherd College, Shepherdstown	1	0.4	-	-	1	-	-	-	-	-	1
Puerto Rico											
University of Puerto Rico, Mayaguez	1	0.4	1	-	-	-	-	-	-	-	1
University of Puerto Rico, San Juan	1	0.4	-	-	-	-	-	-	-	-	NS[c]
Total	224	100	67	23	61	5	12	29	18	4	219[d]

[a] There were 162 institutions identified by name by the respondents.

[b] Program areas may be in separate administrative units within the institutions
AG: Agriculture, BE: Business Education, FCS: Family and Consumer Science, HO: Health Occupations, MK: Marketing, TE: Technology Education, T&I: Trade and Industrial Education.

[c] (NS) Not stated

[d] 5 respondents did not identify program areas

Appendix B CHARACTERISTICS OF PROGRAM ADMINISTRATION

Respondents could indicate their program's administration as either from a College of Agriculture, College of Engineering, College of Education, College of Professional Studies, or "Other." The "Other" category included the following administrative oversights for CTE preservice programs:

Colleges of Business
- College of Business
- College of Education and Business
- College of Business & Technology
- College of Business & Economics
- College of Business, Humanities and Science

Colleges of "Family" or "Human" Sciences
- College of Family, Home and Social Sciences
- College of Family Life
- College of Human Resources and Family Studies
- College of Human Resources and Education
- College of Human Sciences
- School of Human Ecology
- College of Human Environment and Sciences
- College of Health, Education and Human Development
- College of Agriculture and Home Economics

An Education Department or School
- College of Home Economics and Education
- College of Education and Health Science
- Center for Teacher Education
- School of Education
- Education Department
- Division of Professional Studies
- State Department of Education

Other Science and Technology
- College of Applied Arts and Technology
- School of Technology
- College of Sciences, Technology & Health
- College of Science
- College of Arts & Sciences
- College of Math & Science
- College of Fine and Applied Arts
- School of Communications and Information Systems

Appendix C GPA REQUIREMENTS FOR PROGRAM ENTRY, PROGRAM EXIT, AND PROGRAM TRANSFER

Required GPA	Program Entry		Program Exit		Minimum GPA to Transfer	
	Frequency	%	Frequency	%	Frequency	%
2.00	9	4.0	8	3.5	22	9.7
2.25	4	1.8	2	0.9	3	1.3
2.30	1	0.4	-	-	1	0.4
2.40	1	0.4	-	-	-	-
2.50	131	57.7	129	56.8	87	38.3
2.56	-	-	1	0.4	-	-
2.60	3	1.3	4	1.8	5	2.2
2.65	1	0.4	-	-	1	0.4
2.67	-	-	1	0.4	1	0.4
2.70	6	2.6	4	1.8	7	3.1
2.75	27	11.9	21	9.3	21	9.3
2.80	5	2.2	3	1.3	4	1.8
2.85	-	-	1	0.4	1	0.4
2.93	1	0.4	-	-	1	0.4
3.00	11	4.8	25	11.0	8	3.5
3.20	1	0.4	3	1.3	-	-
3.25	1	0.4	1	0.4	1	0.4
Non-response	25	11.0	24	10.6	63	27.8
Total	227	100.0	227	100.0	226	100.0
Mean	2.557		2.593		2.513	
S.D.	0 .203		0 .229		0.256	
Range	2.0–3.2		2.0–3.2		2.0–3.2	

Appendix D MEAN AND STANDARD DEVIATION OF GPA REQUIREMENT FOR ENTRY, EXIT AND TRANSFER BY VOCATIONAL AREAS OF CERTIFICATION.

Vocational Area	Program Entry			Program Exit			Program Transfer		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Agricultural Education	2.53	0.21	60	2.58	0.22	62	2.48	0.28	48
Business Education	2.57	0.14	22	2.53	0.16	20	2.57	0.11	18
Family Consumer Sciences	2.59	0.21	57	2.63	0.21	51	2.58	0.25	41
Health Occupations	2.58	0.15	4	2.63	0.48	4	2.55	0.1	4
Marketing	2.54	0.20	13	2.67	0.25	12	2.6	0.26	11
Technology Education	2.59	0.20	25	2.62	0.25	28	2.49	0.26	23
Trade and Industry	2.52	0.23	14	2.52	0.27	16	2.39	0.29	13
Other	2.33	0.29	3	2.50	0	2	2.67	0.29	3

Note: Other includes vocational area, such as Graphic Arts.

Appendix E NUMBER AND TYPE OF PROGRAM ENTRY CRITERIA LISTED BY RESPONDENTS

Criteria Type	Number of Criteria Mentioned									
	1		2		3		4		Total[c]	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Assessment	78	34.4	14	6.2	3	1.3	0	0.0	95	41.9
Grade Point Average	33	14.5	4	1.8	3	1.3	1	0.4	41	19.1
Academic Requirement [a]	49	21.6	11	4.8	7	3.1	1	0.4	68	30.0
Experience [b]	19	8.4	5	2.2	0	0.0	0	0.0	24	10.6
Personal References	29	12.8	6	2.6	2	0.9	1	0.4	38	16.7
Other [d]	6	2.6	0	0.0	0	0.0	0	0.0	6	2.6

[a] Academic Requirement: Portfolio/Degree/Complete program
[b] Experience: Student teaching/Internship/Field experience
[c] Figures do not total 100% due to multiple criteria mentioned by the respondents
[d] This category of program entry criteria include: open entry, university entrance requirements, critical thinking tests, admission to colleges of Agriculture, Food, and Environmental Sciences

Appendix F NUMBER AND TYPE OF PROGRAM EXIT CRITERIA LISTED BY RESPONDENTS (N=227)

Criteria Type	Number of Criteria Mentioned									
	1		2		3		4		Total[c]	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Assessment	64	28.2	14	6.2	4	1.8	1	0.4	64	28.2
Grade Point Average	20	8.8	3	1.3	2	0.9	1	0.4	20	8.8
Academic Requirement [a]	42	18.5	9	4.0	0	0.0	0	0.0	42	18.5
Experience [b]	42	18.5	16	7.0	1	0.4	0	0.0	42	18.5
Other [d]	8	3.5	0	0.0	0	0.0	0	0.0	8	3.5

[a] Academic Requirement: Portfolio/Degree/Complete program
[b] Experience: Student teaching/Internship/Field experience
[c] Figures do not total to 100% due to multiple criteria mentioned by the respondents
[d] This category of program exit criteria include: Students' background check, host teacher recommendation, PLT, and personal and social stability assessment

Appendix G MEAN AND STANDARD DEVIATION OF PERCEIVED IMPORTANCE OF COMPETENCY AREAS IN CAREER AND TECHNICAL EDUCATION PROGRAM

Competency Area	*M*	*SD*	*N*
Designing meaningful instructional tasks based on real world problems	4.72	.55	225
Advancing student learning	4.66	.55	224
Technology use	4.64	.55	224
Teamwork skills	4.54	.60	225
Staying abreast of change	4.53	.65	226
Leadership skills	4.48	.70	225
Integration of academic areas and vocational education	4.44	.70	226
Lifelong learning	4.41	.76	22(
Working with people from diverse background	4.41	.63	227
Human relations	4.40	.62	225
Collaborative partnership with business and other industry	4.37	.74	226
Using authentic assessment	4.36	.85	222
Collaborative partnership with other faculty	4.24	.74	226
Adapting programs for special needs students	4.19	.75	204
Using assessment as an analytical tool for students	4.18	.75	222
Co-ordination of school and work-based learning	4.17	.78	226
Creating psychologically safe class-room	4.13	.89	223
Safety Education	4.11	.96	216
Developing coping skills	4.11	.79	226

Appendix G (Continued...)

Competency Area	*M*	*SD*	*N*
Academic support	4.09	.75	219
Assessing students in a work context	4.07	.84	224
Human development	4.07	.84	224
Articulation of secondary and post-secondary learning	4.06	.80	227
Community partnership	4.02	.80	224
Designing career exploration opportunities	3.97	.90	225
Collaborative partnership with families	3.97	.88	227
Understanding social and cultural norms	3.94	.84	226
Stimulating work place environment	3.92	.93	223
Collaborative partnership with other educational institution	3.92	.78	220
Identifying career paths	3.80	.87	225
Entrepreneurship	3.79	.85	224
Assessing student based on occupational standards	3.76	1.02	212
Preparation for larger role in communities	3.73	.86	226
Assessing student aptitudes	3.68	.97	224
Understanding labor trends and projections	3.65	.93	225
Family partnership	3.65	.91	225
Preparing to manage personal finances	3.62	1.03	227
Negotiation skills	3.59	.93	225

Note: Level of importace was measured by 5 point Likert type scale: 5=Very important, 4=Important, 3=Somewhat important, 2=Low importance, 1=Not at all important.